

# Science & Society in Media

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**Zaheer Science Foundation**

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## Researchers use sound waves to detect elusive helium gas leaks

A Nanjing University team designed a sensor based on acoustic topological materials, structures that can trap sound using a geometric pattern called a Kagome lattice



A simple Kagome lattice. The name comes from the Japanese for “basket” and “eye”, referring to the pattern when woven with bamboo leaves.

Helium is famous for making balloons float, voices squeak, and as a critical resource for MRI machines and aerospace engineering. Helium is expensive and scarce, finding leaks quickly is essential, but that’s easier said than done because helium is also chemically inert and sensors, which usually rely on chemical reactors, have a tough time detecting it.

In a new study, researchers from Nanjing University in China have reported a sensor that uses sound waves instead of chemistry to ‘hear’ helium leaks. The study paper was published in the December 2025 issue of Applied Physics Letters.

Most gas sensors work like a sponge that reacts when it touches a particular liquid. They work by absorbing gas or using chemical reactions to change an electrical signal. Since helium is chemically stable, it doesn’t react with these sensitive coatings. And while existing methods like mass spectrometry can detect helium, they’re often bulky and expensive.

In the new study, the researchers took a different approach. They designed a sensor based on acoustic topological materials. These are structures that can trap sound using a particular geometric pattern called a Kagome lattice.

The Kagome lattice is made of interlaced triangles and hexagons. In their specific design, the researchers used rigid cylinders connected by small tubes, creating an effect called topological corner states. Essentially, sound waves introduced into the structure get trapped at the three corners of the triangle and are unable to escape into the middle or from the sides.

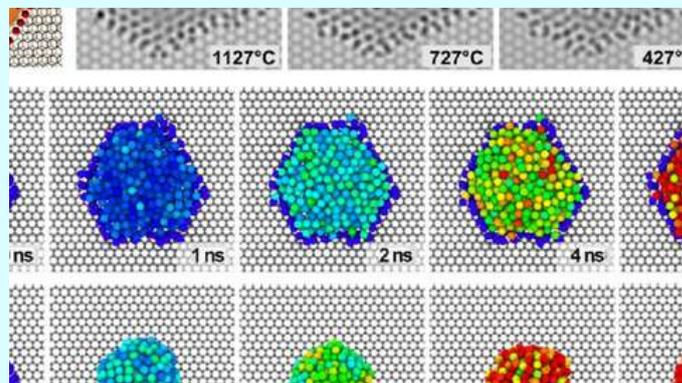
Sound travels at different speeds through different gases. When helium leaks into the sensor and mixes with the air inside, it changes the speed at which sound waves travel through the tubes. This change in speed changes the frequency (or pitch) of the trapped sound at the corners. So by measuring this shift in frequency, the sensor can instantly calculate the concentration of helium present.

Source: <https://www.thehindu.com/sci-tech/science/researchers-use-sound-waves-to-detect-elusive-helium-gas-leaks/article70559994.ece>

Dated: January 28, 2026, <https://www.thehindu.com>

## New state of matter is a solid-liquid hybrid

The findings suggest that the boundary between solid and liquid phases at the nanoscale isn’t as distinct as scientists have thought it to be



An image from the paper showing the corraling effect in action

Scientists from Ulm University in Germany and the University of Nottingham in the UK have reported a new state of matter that behaves as a solid–liquid hybrid, according to a study published in ACS Nano. The material is not a macroscopic slush or gel but a unique atomic structure in which different parts of a single nanoparticle exist in solid and liquid states simultaneously.

As a result, the nanoparticle exhibits properties of both solids and liquids, along with behaviours not seen in either state alone. Using high-resolution transmission electron microscopy, the researchers studied platinum, palladium and gold nanoparticles on graphene. They found that even in a liquid state, some metal atoms remain stationary because they are trapped within gaps in graphene’s carbon network, forming a rigid shell around a liquid core.

This confinement allows the nanoparticles to remain liquid at much lower temperatures (200–300°C) than normal, and when they freeze, they form a disordered solid rather than a regular crystal lattice. The findings suggest that the boundary between solid and liquid phases at the nanoscale is less distinct than previously thought.

The discovery has important implications for catalyst design, especially for platinum-on-carbon catalysts used in fuel cells and chemical industries. By preventing nanoparticles from clumping while maintaining their active state, this solid–liquid hybrid structure could lead to longer-lasting and more efficient catalysts.

Source: <https://www.thehindu.com/sci-tech/science/new-state-of-matter-is-a-solid-liquid-hybrid/article70524544.ece>

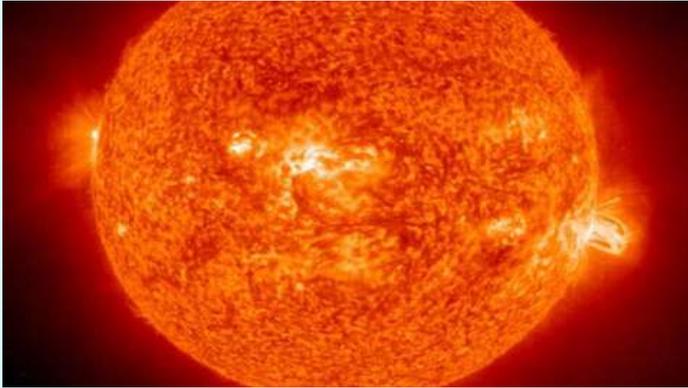
Dated: January 19, 2026, <https://www.thehindu.com>



# SCIENCE & TECHNOLOGY

## IIT-Kanpur team develops new way to predict solar cycles

For decades, solar physicists have used computer simulations called dynamo models to understand how the sun generates its magnetic field



The sun is a giant magnetic ball that goes through roughly 11-year cycles of activity that drive solar flares and space weather that can disrupt satellites and power grids on the earth. But predicting the strength and timing of these cycles has been difficult because scientists can't see the magnetic fields deep inside the sun, where the activity originates.

In a January 20 study in *Astrophysical Journal Letters*, PhD student Soumyadeep Chatterjee and assistant professor Gopal Hazra at IIT-Kanpur reported reconstructing the invisible magnetic fields inside the sun using 30 years of data collected from the surface.

For decades, solar physicists have used computer simulations called dynamo models to understand how the sun generates its magnetic field. Traditionally, these models relied on simplified theoretical rules to represent sunspots. For example, previous models often treated sunspots as simple, symmetrical circular patches even though real sunspots are messy and irregular. But such simplifications often led to inaccurate predictions.

The duo, instead of relying on theoretical shapes, fed their 3D computer model real observations of the sun's surface field. They used data recorded between 1996 and 2025 by satellites like SOHO and the Solar Dynamics Observatory. By forcing the model to align with observations from the surface, they could estimate what the magnetic fields deep inside the sun must be doing.

The data-driven model could reproduce the 'butterfly diagram', a chart visualising how sunspots migrate from the sun's high latitudes towards the equator over a cycle. It also revealed the behaviour of the toroidal magnetic field within the sun's convection zone. This field wraps around the sun like a doughnut and is the primary driver of sunspots. The researchers found their simulated internal field matched the actual intensity of cycles 23, 24, and 25.

Source: <https://www.thehindu.com/sci-tech/science/iit-kanpur-team-develops-new-way-to-predict-solar-cycles/article70564352.ece>

Dated: January 30, 2026, <https://www.thehindu.com>

## Apple leaf waste yields green anti-corrosion solution for metals

The eco-friendly corrosion inhibitor was the outcome of a collaborative study by scientists from Nagaland University and the University of Science and Technology Beijing



Apple farm waste may soon help protect metal pipes, machinery, and infrastructure from corrosion. An international research team led by Nagaland University (NU) has found a way to turn discarded apple leaves into a highly effective, eco-friendly corrosion inhibitor, offering up to 96.2% protection for copper in harsh chemical conditions.

The study, carried out in collaboration with the University of Science and Technology Beijing (USTB), shows that tiny carbon particles made from apple leaves can shield metals from corrosion without using toxic chemicals commonly employed in industry.

The authors of the study are Ambrish Singh of the NU's Department of Chemistry and Yujie Qiang, Ye Zhang, Xinyang Liu, and Ying Jin of the USTB's National Centre for Materials Service Safety. The former is a visiting professor at the USTB. Their findings were published in the *Journal of Alloys and Compounds*, a leading international scientific journal.

Corrosion is a costly global problem, damaging pipelines, storage tanks, and industrial equipment in oil and gas, chemical processing, power generation, and other sectors. Conventional corrosion inhibitors often contain hazardous substances that pose risks to both the environment and human health.

The researchers found that their apple leaf-based solution, known as carbon quantum dots, performed exceptionally well even at low concentrations. In acidic conditions—where metals corrode faster—the material reduced copper corrosion by 94%, rising to 96.2% over time, levels considered highly promising for industrial use.

Explaining its practical value, Prof. Singh stated that industries operating in acidic environments face high maintenance costs and safety risks due to corrosion. "Biomass-based inhibitors like the apple-leaf material could extend the life of industrial equipment while being safer for workers and the environment," he said. Prof. Qiang added that the team used a green processing method to convert apple leaves into nanoscale carbon particles. These particles cling tightly to metal surfaces, forming a stable protective layer that blocks corrosive chemicals.

Source: <https://www.thehindu.com/sci-tech/science/apple-leaf-waste-yields-green-anti-corrosion-solution-for-metals/article70524633.ece>

Dated: January 19, 2026, <https://www.thehindu.com>



# ENVIRONMENT

## A natural heater hidden in India's 'sacred lotus' flowers

When these pretty flowers bloom for three to four days, their internal temperature is around 30-35° C even as the surrounding temperature can go down to 10° C



Thermogenesis is the word for the way living things create their own body heat. While we usually only think of birds and mammals as being warm-blooded, all complex life forms produce some heat. Small power plants in cells, called mitochondria, turn food into a biological fuel, adenosine triphosphate (ATP). But only about one-quarter of the energy from your food actually becomes ATP; the remaining escapes as heat.

Sometimes, mitochondria can turn all the energy in sugars into heat. In plants, an enzyme that can do this is even named alternative oxidase. However, only a few plants generate heat for some very clever uses.

The 'sacred lotus' plant (*Nelumbo nucifera*) is native to North and Central India and grows in ponds, lakes, and gently flowing waters. Flowering begins in early summers, at mild ambient temperatures. Its pretty flower blooms for three to four days. In this period the internal temperature of the flower is around 30-35° C even as the surrounding temperature can go down to 10° C.

Thermogenesis is triggered when the unopened flower's petal tips turn pink. Early next day, the opening flower emits heat, which also helps in releasing an attractive scent. The lotus flower has a central cone-shaped receptacle whose flat top has 10-30 female organs, the pistils. As in other thermogenic plants, the female organs mature first. The scent attracts insect pollinators — bees and beetles — to its receptive pistils. The petals close by midday, forming a cozy, insulated chamber where insects seek shelter for the night.

Before the flower opens on the second morning, the flower's male organs, the stamens, mature. Fed on pollen and covered with it, the insects fly out and move to other receptive plants. The system is designed to ensure cross-pollination between plants, which offers many advantages to their offspring, including greater genetic diversity and increased pest resistance. Each pistil grows into a lotus nut and the receptacle matures into a showerhead-shaped seed pod.

Source: <https://www.thehindu.com/sci-tech/science/natural-heater-hidden-in-india-sacred-lotus-flowers/article70532206.ece>

Dated: January 28, 2026, <https://www.thehindu.com/>

## New plant species recorded in Nagaland community forest

The researchers noted that *Hoya nagaensis* found in Phek district faces a threat from shifting cultivation, which involves slashing, burning trees on hill slopes for cultivation



(Left to Right) Joynath Pegu, Dr. Gyati Yam & Ms. Vieneite-o Koza who led the Nagaland University Research team that discovered new plant species in North East

A team of researchers from Nagaland University has recorded a new plant species in the high-altitude forests of Nagaland, cementing the northeastern region of India as a biodiversity hotspot and reaffirming the vital role of community-protected forests in conservation.

The hitherto undocumented species, *Hoya nagaensis*, was found during botanical surveys in remote forest areas that have remained largely unexplored by science. Nagaland's forests are unusual in that many are protected and managed by local communities rather than the State. While this traditional stewardship has preserved vast tracts of forest, limited scientific documentation has left much of the region's biodiversity unrecorded.

The Nagaland University team set out to bridge this gap through fieldwork and taxonomic research. Led by Gyati Yam of the University's Department of Forestry, the study involved observation, specimen collection, and comparison with known species. The other authors of the study are the university's researchers, Vieneite-o Koza and Joynath Pegu.

The research, supported by Nagaland University's Start-Up Project for Young Faculty, was published in *Kew Bulletin*, an international journal on plant taxonomy and biodiversity.

According to the researchers, what makes *Hoya nagaensis* special is its distinctive appearance. The plant displays unique leaf shapes and floral features that clearly set it apart from other members of the *Hoya* genus, a group known for its ornamental value. These characteristics confirmed that the species was previously unknown to science. The plant has so far been recorded from only one location: the Kavünhou Community Reserved Forest in Phek district. Its limited range, combined with threats such as shifting cultivation and forest disturbance, made researchers provisionally classify it as Critically Endangered.

Vice-Chancellor of Nagaland University, Jagadish Kumar Patnaik, described the find as a "powerful reminder of the ecological value of community-managed forests". He noted that such areas act as safe havens for rare and endemic species while contributing vital data to global plant science.

Source: <https://www.thehindu.com/news/national/nagaland/new-plant-species-recorded-in-nagaland-community-forest/article70556012.ece>  
Dated: January 27, 2026, <https://www.thehindu.com/>



# Environment

## Climate change worsened rains and floods which killed dozens in southern Africa, study shows

Researchers say human-induced climate change worsened recent torrential rains and floods in southern Africa



Human-caused climate change worsened the recent torrential rains and floods which devastated parts of southern Africa, killing more than 100 people and displacing over 300 000, researchers said on Thursday (January 29, 2026).

A study by the World Weather Attribution, which analyzed the recent heavy rainfalls that caused severe flooding in parts of South Africa, Mozambique and Zimbabwe, showed that the region experienced a year's worth of rain in a period of 10 days.

It resulted in widespread damage to housing and infrastructure estimated to run into the millions of dollars, and caused untold human suffering, including the loss of lives. Many homes and buildings in Mozambique were completely submerged under water, while roads and bridges were swept away in the South African provinces of Limpopo and Mpumalanga and parts of Zimbabwe.

The study was conducted by scientists from across the world using peer-reviewed methods to assess the impact of climate change on severe weather patterns and events. The data obtained from the recent downpours, the rare magnitude of which occurs roughly once every 50 years, confirmed a “clear move toward more violent downpours,” the study shows.

It was also compounded by the current La Nina weather phenomenon which naturally brings wetter conditions in the southern Africa region but was now operating within a much warmer atmosphere.

“Our analysis clearly shows that our continued burning of fossil fuels is not only increasing the intensity of extreme rainfall, but turning events that would have happened anyway into something much more severe,” said Izidine Pinto, a senior climate researcher at the Royal Netherlands Meteorological Institute.

Pinto, who co-authored the study, said the climate models used struggled to pinpoint exactly how much worse the recent floods were made by climate change, but that a 40% increase in the intensity of the rains would be impossible to explain without human-caused climate change.

Source: <https://www.thehindu.com/sci-tech/energy-and-environment/climate-change-worsened-rains-and-floods-which-killed-dozens-in-southern-africa-study-shows/article70564050.ece>  
Dated: January 29, 2026, <https://www.thehindu.com/>

## A dangerous march towards a Himalayan ecocide

In the ecologically vulnerable Himalayas, disaster resilience must take precedence over disaster-prone projects and infrastructure



In 2025, which saw nearly 331 days of near-continuous climate impacts, the human cost was staggering: over 4,000 deaths attributed to climate-induced disasters in 2025 alone, with Himachal Pradesh and Uttarakhand bearing the heaviest toll. Towns such as Dharali, Harsil, Uttarkashi, Chamoli, Kullu, Mandi and Kishtwar were ravaged by sudden cloudbursts, landslides, and avalanches that morphed into deadly flash floods, obliterating lives and livelihoods.

This onslaught of scorching heat, catastrophic floods and land subsidence appears to be the new normal. And yet, how does one explain the government's decision to endanger Dharali and Harsil — areas recently devastated by an avalanche-turned-flash-flood — by pushing forward a massive infrastructure project that would fell nearly 7,000 Devdar trees and countless native species?

### Pushing infrastructure in a disaster zone

On November 12, the Uttarakhand Forest Department approved the felling of these trees, diverting 43 hectares of forest land for the Char Dham road-widening project, with 10 hectares meant for muck dumping. This decision again relies on the flawed DL-PS (double-lane with paved shoulder) standard that mandates a 12-metre paved surface in an area demonstrably prone to disasters.

The region, located north of the Main Central Thrust (MCT), is classified as a critical zone where major infrastructure is explicitly discouraged. There are also hanging glaciers and the area is fed by the Gangotri, one of the world's fastest receding glaciers, which sustains several unstable, moraine-laden glaciers in the valley. One of these glacier avalanches contributed to the disaster in Dharali.

This raises a pivotal and urgent question: what is the true value of these trees for this region?

The Devdar (Deodar) forests are crucial ecological assets in the delicate Himalayan landscape. Their extensive root systems stabilise slopes, prevent landslides and serve as natural barriers against avalanches and glacial debris flows, safeguarding downstream communities. These forests are also essential for the water quality of the Ganga. This is important as they are situated within the Bhagirathi Eco-Sensitive Zone, a nearly 4,000-square-kilometre buffer that was established in 2012 to protect the river's last pristine stretch.

Source: <https://www.thehindu.com/opinion/lead/a-dangerous-march-towards-a-himalayan-ecocide/article70539107.ece>  
Dated: January 23, 2026, <https://www.thehindu.com/>



# AGRICULTURE

## Why participatory science is crucial to tackling coconut root wilt disease

Coconut palms that display tolerance under high inoculum pressure and intense vector load hold the key to combating phytoplasma



Coconut trees at the Vanavarayar Institute of Agriculture at Manakkadavu in Pollachi.

Coconut is one of the most important horticultural crops in peninsular India, with Karnataka, Tamil Nadu and Kerala together accounting for about 82–83% of national production. Apart from its economic value, coconut shapes the cultural and physical landscape of regions such as Alappuzha and Pollachi. However, this iconic crop is now under serious threat from phytoplasma-induced root wilt disease, which has destroyed large areas of traditional coconut plantations.

Root wilt is a debilitating, non-fatal disease first reported over 150 years ago in Kerala. Despite decades of research at the Central Plantation Crops Research Institute (CPCRI), Kayamkulam, no permanent cure has been found. The disease spreads through insect vectors and has expanded rapidly in recent years due to climate extremes and the emergence of new pests such as whiteflies. These combined stresses have made coconut palms highly vulnerable, with more than 30 lakh palms already affected.

The impact is especially severe in intercropping systems, such as those in Pollachi, where cocoa and nutmeg suffer once the coconut canopy collapses. Although resistant and tolerant varieties have been developed, their availability remains limited, and current management practices offer only partial relief.

A more sustainable solution lies in participatory selection and breeding. Identifying naturally tolerant palms in heavily affected areas, with farmers playing a central role, can accelerate the development of locally adapted varieties. With proper training and institutional support, this citizen-science approach can generate large-scale, field-based solutions.

To combat the growing threat, coordinated action among CPCRI, the Coconut Development Board, and State agricultural universities is essential. A shared research and breeding framework is urgently needed to protect coconut cultivation from the expanding phytoplasma menace.

Source: <https://www.thehindu.com/sci-tech/energy-and-environment/why-participatory-science-is-crucial-to-tackling-coconut-root-wilt-disease/article70513728.ece>

Dated: January 16, 2026, <https://www.thehindu.com>

## What an edible insects stall revealed about acceptance, 'normal' food



Why does the idea of eating insects provoke discomfort, even before taste or nutrition enter the conversation? This question emerged repeatedly at an edible insects stall during a food mela at the Science Gallery in Bengaluru, as visitors negotiated curiosity, disgust and ideas of what counts as “normal” food.

Many assumed the practice was foreign. “This is eaten in other countries, right?” was a common response. Few realised that entomophagy — the practice of eating insects — has long been part of food cultures within India, especially in parts of Northeast India such as Nagaland and Arunachal Pradesh, where insects are eaten seasonally and sold in local markets.

At the stall, visitors sampled cricket cookies, chilli garlic crickets and fried silkworms. Nearly 60% were first-time tasters. Initial hesitation often gave way to surprise. One student described the silkworms as “better than expected”, while another visitor said crickets had “more flavour” and silkworms an “eggy texture”.

Taste appeared to shift perceptions more than curiosity. Beyond experience, insects are increasingly promoted as a sustainable protein source in a world facing growing food and climate pressures. Many species are rich in protein and micronutrients, with around 80% of their body mass being edible, compared to about 55% for poultry. They also require far less land, water and feed than conventional livestock.

Yet despite these advantages and their presence in Indian food traditions, insect consumption is declining. Urbanisation has created cultural distance, and insect-eating is often framed as “indigenous” or rural — acknowledged but marginalised. In this framing, food choices reflect class and ideas of modernity as much as nutrition.

Some visitors recognised this disconnect. While many appreciated the sustainability argument, they still questioned whether insects could become a staple or replace existing food groups. Others stressed the need to acknowledge the communities where these practices originated.

Rather than providing answers, the stall revealed how assumptions and hierarchies shape what is considered acceptable food. Presenting insects in processed forms, such as cookies, appeared to lower psychological barriers, allowing curiosity to precede judgement.

As Priyadarsanan Dharma Rajan from ATREE’s Insect Biosystematics and Conservation Laboratory noted, research is now focused on developing sustainable insect-rearing systems. Producing insects at scale through standardised methods could reduce pressure on wild populations and ensure safety and consistency — suggesting that changing how insects are produced may be as important as changing how they are perceived.

Source: <https://www.thehindu.com/sci-tech/science/what-an-edible-insect-stall-revealed-about-acceptance-normal-food/article70504725.ece>

Dated: January 14, 2026, <https://www.thehindu.com>



# AGRICULTURE

## The possible applications of olive pomace: A study reveals the most sustainable option



The extraction of olive pomace oil is currently the most sustainable option for managing byproducts of the olive oil industry, according to a study by the University of Córdoba (UCO) that evaluates economic, environmental, and social indicators. Each olive harvest generates large quantities of alperujo, the main byproduct of olive oil production, which must be managed sustainably.

At the industrial level, mills mainly use three recovery methods: extracting olive pomace oil (used in cooking and energy production), composting (which produces organic fertilizer), and gasification (which generates renewable energy and biochar for soil improvement and carbon retention).

Researchers from UCO developed a methodology combining life cycle environmental analysis, economic indicators (investment, risk, profitability), and social factors (employment quality and seasonality). The results show that olive pomace oil extraction ranks highest overall, mainly because it requires no major investment and carries low economic risk.

However, gasification performs better in environmental and social terms, such as reduced emissions and higher-quality jobs, while composting contributes significantly to rural employment and soil health, though it is less profitable.

The study concludes that differences between the three options are small, and changes in market conditions or public policies could shift the balance. Therefore, targeted public incentives are needed to promote options with greater social and environmental benefits.

Source: <https://phys.org/news/2026-02-applications-olive-pomace-reveals-sustainable.html>

Dated: February 3, 2026, <https://www.thehindu.com>

## Probiotics for plants: Microorganisms boost growth and nitrogen uptake



Researchers at the Technical University of Munich (TUM) have identified a bacterial genus that enhances root growth and nitrogen uptake in plants, opening the door to customised “plant probiotics” that could reduce the need for nitrogen fertilisers.

Plants grow within complex microbial communities and actively shape their surrounding microbiome, which in turn influences plant growth. Exploiting this interaction, scientists are exploring beneficial microorganisms as probiotics for plants, says Peng Yu, Professor of Plant Genetics at TUM.

The team analysed plant–microbe interactions at genetic, metabolic and physiological levels, with results published in *Nature Plants*. They found that 203 bacterial genes are strongly influenced by the host plant, showing that plants actively regulate their microbiome. Moreover, 45% of the natural variation in nitrogen uptake was explained by the combined genetics of plants and microbes.

One genus, *Sphingopyxis*, was identified as particularly beneficial. Experiments with rapeseed showed that these bacteria improved root development in nitrogen-poor soils, leading to better nitrogen uptake.

The findings suggest that fertiliser use could be reduced without compromising crop growth or yields, potentially lowering agriculture’s environmental impact. The researchers now aim to develop probiotic mixtures of multiple microbes to further enhance nutrient use efficiency in plants.

Source: <https://phys.org/news/2026-02-probiotics-microorganisms-boost-growth-nitrogen.html>

Dated: February 3, 2026, <https://www.thehindu.com>



# HEALTH

## Study discovers stress-reducing role of natural molecule in body, may help with metabolic disorders

The study investigated damage to mitochondria – the energy powerhouse of a cell that makes muscles function, neurons to fire, among other processes in the body



Researchers have found that a naturally occurring molecule in the body plays a stress-reducing role, a discovery which they said could lead to new drugs and treatment for metabolic disorders and ageing. Researchers from The University of Queensland looked at microRNAs, which bind to genes and prevent them from being over-activated.

The study published in the journal Nature Communications investigated damage to mitochondria – the energy powerhouse of a cell that makes muscles function, neurons to fire, among other processes in the body.

"MicroRNAs have many different functions, but this is the first time it has been shown that they regulate mitochondrial stress pathways and prevent the spread of stress signals to other cells and tissues throughout the body," said author Steven Zuryn, a molecular geneticist at the University of Queensland.

"Damage to the mitochondria accrues over time and is closely associated with metabolic disorders and diseases of ageing including neurodegeneration, cancer and diabetes, as well as ageing itself," Zuryn said.

The study looked at a specific microRNA, called 'miR-71', in *Caenorhabditis elegans* worm models or *C. elegans*.

Zuryn said the microRNAs lower chronic stress in the body and protect cells. "Our research implies that we could design highly specific and deliverable microRNAs that target these same genes in humans, thereby reducing the intensity and spread of damaging chronic stress signals." "We're not necessarily aiming to develop an anti-ageing drug, but an understanding of the deep underlying mechanisms of these processes may one day lead to this outcome,

Source: [https://www.thehindu.com/sci-tech/health/study-discovers-stress-reducing-role-of-natural-molecule-in-body-may-help-with-metabolic-disorders/article70552054.ece?cx\\_testId=130&cx\\_testVariant=cx\\_1&cx\\_artPos=2&cx\\_experienceId=EXPO56ZDYSGX&cx\\_experienceActionId=showRecommendationsJX0HNZ2RGA4H113#cxrecs\\_s](https://www.thehindu.com/sci-tech/health/study-discovers-stress-reducing-role-of-natural-molecule-in-body-may-help-with-metabolic-disorders/article70552054.ece?cx_testId=130&cx_testVariant=cx_1&cx_artPos=2&cx_experienceId=EXPO56ZDYSGX&cx_experienceActionId=showRecommendationsJX0HNZ2RGA4H113#cxrecs_s)  
Dated: January 26, 2026 , <https://www.thehindu.com/>

## Preventing recurrent urinary tract infections

Preventing these infections is important, not only for women's health, but also to reduce the growing problem of antibiotic resistance



A urinary tract infection (UTI) is a common health problem affecting women. One in three women will have at least one episode of a UTI requiring antibiotics by the age of 25. Half of all women will have at least one episode of a UTI at some point in their life. Approximately 25–30% of women may then have a recurrent infection within six months.

Recurrent episodes of UTIs cause discomfort, lead to increased sick leave and increase the risk of antibiotic abuse. Preventing these infections is important — not only for women's health but also to reduce the growing problem of antibiotic resistance.

### Women's vulnerability

Women have a shorter urethra compared to men, and its opening is close to the vagina and anus, making it easier for bacteria from the bowel to reach the bladder. Vaginal tissues are naturally more receptive to certain bacteria, and this risk is higher during early adulthood (with the start of sexual activity) and again after menopause, when hormonal changes reduce natural protection.

### Diagnosis and prevention

A recurrent UTI is defined as two or more culture-proven infections in six months, or three or more in a year. Lifestyle changes can go a long way towards preventing UTIs. Some tips include:

- Drink a lot of water/fluids
- Don't hold in urine for too long
- Pass urine after sexual intercourse
- Avoid spermicides
- Consume a healthy, balanced diet
- Ensure strict blood sugar control

Source: <https://www.thehindu.com/sci-tech/health/preventing-recurrent-urinary-tract-infections/article70564005.ece>

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# HEALTH

## All you need to know about: scabies

Scabies is a common skin condition caused by the *Sarcoptes scabiei* mite



### What is scabies?

Scabies is a contagious skin condition caused by a tiny mite called *Sarcoptes scabiei*, which burrows under the skin and causes an itchy rash. It occurs worldwide and can affect anyone, though it is more common in hot, tropical countries like India. According to the World Health Organization, scabies is one of the most common skin diseases in developing countries.

The condition develops when female mites tunnel into the skin to live, lay eggs, and release waste. The itching is the body's allergic reaction to the mites. Scabies spreads easily through close physical contact and, sometimes, through shared clothing and bedding. It is not related to poor hygiene.

### Signs and symptoms

The main symptom is intense itching, often worse at night. In people who have never had scabies, symptoms may take up to six weeks to appear, but in previously infected individuals, they may develop within days. Common affected areas include between fingers and toes, armpits, wrists, elbows, knees, waist, genitals, buttocks, and under the nails.

In infants and young children, the rash may also appear on the palms, soles, and scalp. Burrow marks—thin, wavy lines on the skin—along with bumps and sores are typical.

### Crusted scabies

Crusted scabies is a severe form seen in people with weakened immune systems. While typical scabies involves 10–15 mites, crusted scabies may involve thousands or millions. It causes thick, scaly crusts on the skin, is highly contagious, difficult to treat, and can lead to secondary infections if not managed promptly.

### Treatment and prevention

Scabies is treated with medicated creams or oral drugs. Creams are usually applied over the entire body from the neck down and left on for 8–14 hours. Children may need treatment on the scalp and face. Itching may continue for a few weeks after treatment.

Ivermectin is an oral medicine but is not recommended for pregnant women or children under 15 kg. To prevent spread, all household members should be treated, even if they have no symptoms. Bedding and clothes should be washed in hot water and dried in sunlight or a dryer. Items that cannot be washed should be sealed in plastic bags for a week. Rooms should be thoroughly cleaned and vacuumed.

Source: [https://www.thehindu.com/sci-tech/health/all-you-need-to-know-about-scabies/article70532774.ece?cx\\_testId=15&cx\\_testVariant=cx\\_1&cx\\_artPos=0&cx\\_experienceId=EXGPL9K6AREK&cx\\_experienceActionId=showRecommendationsH3LXUVK6YFXR135#cxrecs\\_s](https://www.thehindu.com/sci-tech/health/all-you-need-to-know-about-scabies/article70532774.ece?cx_testId=15&cx_testVariant=cx_1&cx_artPos=0&cx_experienceId=EXGPL9K6AREK&cx_experienceActionId=showRecommendationsH3LXUVK6YFXR135#cxrecs_s)

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## All you need to know about: cellulitis

Cellulitis is a common skin infection caused mostly by streptococcus and staphylococcus bacteria. Anyone can contract cellulitis, but persons with skin wounds, or compromised immune systems, which allows the bacteria to enter easily, are at higher risk.



Cellulitis is a common bacterial infection that can be treated with a course of antibiotics. This skin infection is caused by a bacteria entering the system through broken skin, a wound or contracted by those with weak immune systems. The infection can affect the subcutaneous tissues, and is commonly found to affect the legs, feet and toes but could occur on the face, arms, hands and fingers as well. If left untreated the infection could spread to the lymph nodes and the blood stream, requiring hospitalisation.

### What is cellulitis?

Cellulitis is a common skin infection caused mostly by streptococcus and staphylococcus bacteria. It can affect the tissues beneath the skin. Though it can affect any part of the body such as the face, arms, hands and fingers it usually affects the legs, feet and toes. Cellulitis can also affect just one side of the body. Anyone can contract cellulitis, but persons with skin wounds, or compromised immune systems, which allows the bacteria to enter easily, are at higher risk. Poor skin hygiene may also be a contributing factor. Cellulitis is not contagious but if untreated or if severe, it can spread to tissue under the skin, the lymph nodes and the bloodstream.

### Symptoms and treatment

Infected skin may appear slightly discoloured, and warm to touch. As the infection spreads, the discolouration darkens and the skin swells and becomes tender. Apart from swelling and warmth, the infection could be painful. Affected persons could have fever, feel fatigued, experience chills, develop spots on the skin, blisters filled with fluid and dimpling of the skin. Treatment usually consists of a course of oral antibiotics. Severe cases may need hospitalisation and IV antibiotics.

### Preventing relapses

Good skin hygiene can help prevent a relapse. It is necessary to wash hands regularly with soap and warm water. Cleaning and trimming finger and toenails and thoroughly drying the skin after a shower, wearing clean clothes and keeping small wounds clean can prevent the infection.

### Cellulitis in India

An observational study by Tripta S. Bhagat, Luv Kumar, et al published in the The International Journal of Lower Extremity Wounds in March 2023 found that cellulitis was commonly seen in men, in the working age group. The mean age of those affected in the study was around 36 years. The affected were in field jobs, and among them 50% of the time, the risk factor for the condition was trauma. Other factors included diabetes mellitus and smoking. The commonest complication was abscess. While over half the persons required only conservative management the rest needed surgical intervention, requiring hospitalisation for five or more days.

Source: <https://www.thehindu.com/sci-tech/health/all-you-need-to-know-about-cellulitis/article70459892.ece>

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# S&T COOPERATION FOR GLOBAL SOUTH

## UNOSSC and the South Centre Renew Partnership to Advance South-South and Triangular Cooperation



The United Nations Office for South-South Cooperation (UNOSSC) and the South Centre have renewed their partnership through the signing of a new Statement of Intent, reaffirming their shared commitment to advancing South-South and triangular cooperation in an increasingly complex global environment.

The Statement of Intent was signed on 12 January 2026 by Dima Al-Khatib, Director of UNOSSC, and Carlos María Correa, Executive Director of the South Centre. The agreement establishes a renewed and elevated framework for collaboration over the next two years, reflecting both institutions' commitment to strengthening collective action and knowledge exchange among developing countries.

The renewed partnership builds on a strong foundation of cooperation between the two institutions, including a Memorandum of Understanding signed in 2019, which concluded in 2021, as well as the South Centre's engagement under Phase I of the South-South Global Thinkers Initiative. The new framework responds to evolving global realities and seeks to deepen collaboration in areas of shared strategic importance.

The Statement of Intent reflects a shared recognition that, amid intersecting crises, geopolitical tensions, shrinking fiscal space and persistent development inequalities, South-South and triangular cooperation are more critical than ever. In this context, such cooperation provides developing countries with practical avenues to exchange solutions, amplify collective voice, and advance sustainable development outcomes grounded in mutual experience and solidarity.

Source: <https://unsouthsouth.org/2026/01/29/unossc-and-the-south-centre-renew-partnership-to-advance-south-south-and-triangular-cooperation/>

Dated: January 29, 2026, <https://unsouthsouth.org/>

## India-UN Fund: Category 5 Hurricane Shelter Activated in The Bahamas with UNDP and India Support



KINGSTON, Jamaica – A climate resilient hurricane shelter, able to withstand category five-level disasters and flagged as a global best practice, is now open and activated on Abaco, the culmination of a tri-lateral partnership between the governments of The Bahamas and India and the United Nations Development Programme (UNDP).

Built to withstand 200 mile per hour winds and host up to 800 persons, the newly operationalised hurricane shelter and community center is built as a multi-purpose facility for year-round community activities and a safe space during disasters for the people of Abaco. It includes solar power and water harvesting systems, disability inclusive features at access points and bathrooms, an industrial kitchen, an office space for emergency personnel and communications and outdoor space for sporting activities during the year.

The UNDP-managed project was funded by the government of India with a USD 1 million grant from the India-UN Development Fund as a show of solidarity and friendship to the government and people of The Bahamas. The Disaster Risk Management Authority (DRA) of The Bahamas served as national implementing partner for the initiative, overseeing construction activities and mobilising 3.5 million USD parallel co-financing from the government of The Bahamas.

High Commissioner of India to The Bahamas (resident in Kingston, Jamaica), His Excellency Shri Mayank Joshi disclosed that the Abaco Shelter has been chosen as a global best practice under the India-led Coalition of Disaster Resilience Infrastructure (CDRI) – a global partnership inspired by India's experiences with natural disasters, in which UNDP also serves as a strategic partner.

“As we hand over this facility, we celebrate not just a building but a partnership of shared values, shared challenges, and share aspirations for a safer and more prosperous future,” Joshi said.

The permanent representative of India to the United Nations and director on the management board of the India-UN Development Partnership Fund commended the outcome, embodying the spirit of “Vasudhaiva Kutumbakam” – the world is one family, reflecting India's solidarity with Small Island Developing States (SIDS) and its steadfast support for climate resilience and disaster preparedness.

Source: <https://unsouthsouth.org/2026/01/29/india-un-fund-category-5-hurricane-shelter-activated-in-the-bahamas-with-undp-and-india-support/>  
Dated: January 29, 2026, [https://unsouthsouth.org](https://unsouthsouth.org/)



# S&T COOPERATION FOR GLOBAL SOUTH

## Uruguay Assumes 2026 Group of 77 Chairmanship as Global South Reaffirms Unity and Solidarity



The United Nations Office for South-South Cooperation (UNOSSC) congratulates Uruguay on assuming the chairmanship of the Group of 77 (G77) and China for 2026 and looks forward to strengthened solidarity and cooperation as the Group continues to advance the interests of developing countries within the United Nations system.

Established in 1964 by 77 countries, the G77 has expanded to 134 Member States and serves as a leading voice of the Global South, providing a platform for collective advocacy and promoting South-South and triangular cooperation.

The ceremonial handover took place at UN Headquarters in New York on 14 January 2026, marking the transition from Iraq's leadership in 2025 to Uruguay's in 2026. The event included remarks by the UN Secretary-General, the President of the General Assembly, and representatives of both countries.

Speaking on behalf of the outgoing Chair, Iraq's Permanent Representative, Ambassador Lukman Al-Faily, described Iraq's tenure as a historic responsibility and thanked Member States for their trust and solidarity. He highlighted the Group's active role in key global processes, including financing for development, social development, international financial reforms, and digital cooperation, with a strong focus on equity, development, and adequate support for developing countries.

Source: <https://hunsouthsouth.org/2026/01/29/uruguay-assumes-g77-chairmanship-as-global-south-reaffirms-unity-and-solidarity/>  
Dated: January 29, 2026, <https://hunsouthsouth.org/>

## Türkiye's Contribution to UNFSSC Strengthens UNOSSC-UN Technology Bank Innovation Partnership for LDCs



A new contribution from the Government of Türkiye to the United Nations Fund for South-South Cooperation (UNFSSC) is strengthening science, technology and innovation in Least Developed Countries (LDCs) and enhancing collaboration between the United Nations Office for South-South Cooperation (UNOSSC) and the UN Technology Bank.

This partnership reflects the spirit of UN80, demonstrating how South-South and triangular cooperation can deliver practical solutions through shared leadership, expertise and collective action. By bringing together UN institutions and Southern-led knowledge, the initiative supports more inclusive and effective multilateral cooperation.

Türkiye's contribution enables UNOSSC and the UN Technology Bank to work together strategically, leveraging their respective strengths to promote innovation-led development. The collaboration aims to address key challenges faced by LDCs, including limited technological capacity, structural vulnerabilities and uneven access to innovation ecosystems.

In today's complex global environment, strengthening science, technology and innovation is essential for sustainable development and progress toward the 2030 Agenda and the Doha Programme of Action. The partnership will focus on knowledge sharing and capacity development through analytical reviews, policy dialogues and innovation-focused initiatives, aligned with country-driven priorities.

As host of the UN Technology Bank and a strong advocate of South-South cooperation, Türkiye continues to demonstrate leadership in advancing innovation-based solutions for LDCs, laying the groundwork for scalable initiatives and broader partnerships in the future.

Source: <https://hunsouthsouth.org/2026/01/30/turkiyes-contribution-to-unfssc-strengthens-unOSSC-un-technology-bank-innovation-partnership-for-ldcs/>  
Dated: January 30, 2026, <https://hunsouthsouth.org/>



# OTHERS

## Why is earth's atmosphere not blown away into space?



The primary reason is gravity, which acts like an invisible tether. Every molecule of gas in our atmosphere, nitrogen, oxygen, carbon dioxide, etc., has mass. Earth's core exerts a gravitational pull that attracts these molecules towards the center of the planet. Even though earth travels at 1,07,000 kmph around the sun, the atmosphere is trapped inside earth's 'gravity well'.

Also, the atmosphere possesses the same momentum as the solid earth. Since the gases formed alongside the planet or were released from it, they were already moving at that speed. In space, there's no friction to brush the atmosphere away. Imagine being inside a fast aeroplane: the air inside moves with the plane and you don't feel a 900 kmph wind hitting your face: because you and the air share the same motion.

While gravity holds the air down, the magnetosphere protects it from being stripped away by the solar wind, a stream of charged particles from the sun that could otherwise blow the atmosphere away.

Source: <https://www.thehindu.com/sci-tech/science/why-is-earths-atmosphere-not-blown-away-into-space/article70591016.ece>  
Dated: February 04, 2026, The Hindu

## Why are some stars blue, some white, some red?

Stars behave roughly as objects that absorb all incoming radiation and radiate energy back based solely on their temperature. The colour we see depends on the wavelength of light where the star emits the most energy. According to Wien's law, hotter stars emit more energy at bluer wavelengths.

Blue and blue-white stars have surface temperatures of 10,000 K or more. These are usually very massive stars with nuclear fusion happening at a furious rate. Examples include Rigel and Spica. White stars' surfaces are at 7,500-10,000 K, hot enough for the peak radiation to be in the visible spectrum. To the human eye, colours appear together as white. This is also why we don't see green stars: they also emit other colours that the human eye mixes together. Examples include Sirius A and Vega.

Yellower stars such as the sun and Alpha Centauri A have surfaces at 5,200-7,500 K. Finally, orange and red stars' surfaces are up to 5,200 K hot. These are the coolest stars and emit most of their energy as infrared radiation. Examples include Betelgeuse and Proxima Centauri.



Source: <https://www.thehindu.com/sci-tech/science/why-are-some-stars-blue-some-white-some-red/article70559417.ece>  
Dated: January 28, 2026, The Hindu



## Paresthesia: The Science of ‘Sleeping Limbs’

Have you ever had this sensation that your limbs have gone numb for a while? Do you feel invisible needles under your skin? Does it tingle? Normally, this would mean your limbs have ‘fallen asleep’, or as doctors would call it ‘paraesthesia’.



Paresthesia, or sleeping limbs, is characterised by a numb, tingling, or a slight burning sensation in your limbs that usually affects hands, arms, and feet. It can also affect joints, pressure points and areas close to a nerve.

### Science it out

So, how does this happen? Well, when you put pressure on a limb for too long — like sitting cross-legged for too long, sleeping on one arm, leaning on one elbow, or holding a phone or book in one position — this leads to temporary nerve compression or slowed down blood flow. When you finally remove pressure, nerves fire rapidly as they “restart”. The brain will interpret this as a pins-and-needles sensation. The sensation fades soon after movement continues.

It is also caused by bumping something (like your elbow) which can lead to a sharp, shooting-like feeling. That’s known as “hitting your funny bone,” or the ulnar nerve.

### ‘Underlying’ causes

Based on what causes paresthesia, there are two types of it: transient (temporary) and persistent. Transient paresthesia is more common, and is often short-lived. It is caused by pressure on the limbs released after long hours. Some other causes include:

- Dehydration
- Hyperventilation
- Migraines, and
- Panic attacks

However, persistent paresthesia can be a sign of more serious conditions, like brain tumours, strokes, low blood sugar or thyroid function, vitamin deficiency, or autoimmune or inflammatory diseases.

### Prevention

Temporary paresthesia can be fixed by changing postures more frequently. Stretch as often as possible and avoid putting too much pressure on your limbs. Of course, should it be persistent, you might want to see a doctor. It could be an underlying sign of a life-threatening condition.

Limbs don’t “fall asleep” in the true sense, your nerves are just squashed temporarily. Your body is essentially telling you to get up and get a move on. In most cases, it is an easy to prevent condition, but in rare cases, you’re being warned of something more serious. Either way, it’s just another quirky way for your nerves to send signals.



Source: <https://www.thehindu.com/children/paresthesia-the-science-of-sleeping-limbs/article70529274.ece>

Dated: February 03, 2026 , <https://www.thehindu.com/>