



बहुजन हिताय बहुजन सुखाय  
Sahyadri Bahujan Vidya Prasarak Samaj's

# SAHAKAR MAHARSHI BHAUSAHEB SANTUJI THORAT COLLEGE OF ARTS, SCIENCE AND COMMERCE

Tal - Sangamner, Dist - Ahmednagar, (422605) NAAC Accredited  
'B' Grade

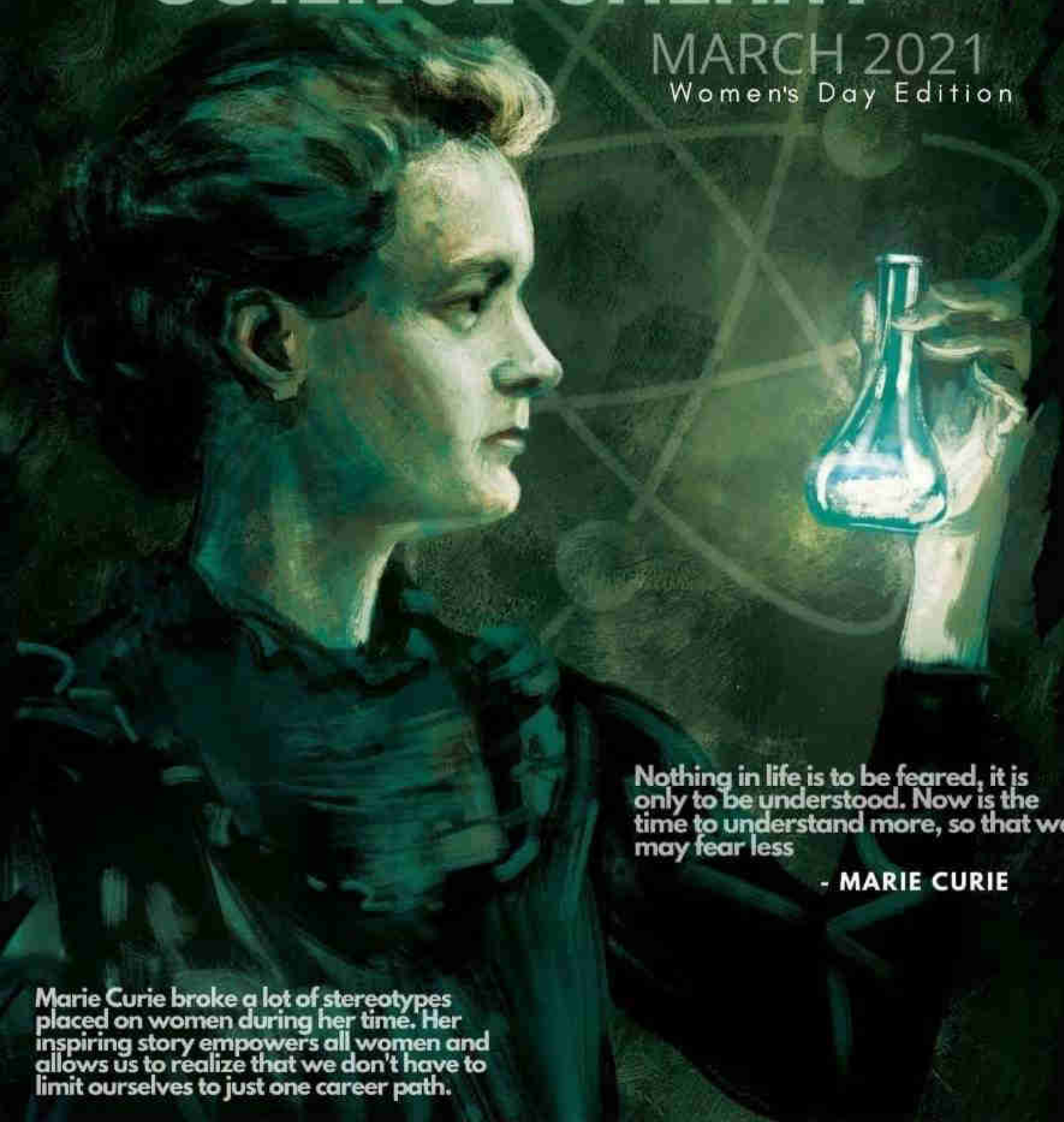
॥ ज्ञानं देवता ॥



सहायक कुल, साह्याद्री महाविद्यालय

# SCIENCE GALAXY

MARCH 2021  
Women's Day Edition



Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less

- MARIE CURIE

Marie Curie broke a lot of stereotypes placed on women during her time. Her inspiring story empowers all women and allows us to realize that we don't have to limit ourselves to just one career path.

# About The College



**Sahakar Maharshi Bhausaheb Santuji Thorat College of Arts Science and Commerce, Sangamner, Affiliated to Savitribai Phule Pune University, recognized by UGC under section V) and 12(B) run by Sahyadri Bahujan Vidya Prasarak Samaj, established in IBBS under the leadership of veteran leader, freedom fighter, founder of the cooperative Sugar factory and an earnest social worker, Late. Shri. Bhausaheb Santuji Thorat. S. B. V. P. Samaj presently runs 2 Primary, 21 High schools, 10 junior Colleges, 2 Senior Colleges and is actively devoted to the noble cause of education un to the last**

**The Institution offers degree courses like & B.B.A., B.C.A., B.Sc.(Computer Science), B.A., B.Com, B.Sc, post graduate courses in MA.(Hindi, History, Economics, Politics) & Post Graduate Research center In Economics, M.C.A. (Commerce), M.Com (E-commerce), M.sc.(Drug Chemistry) and certificate courses like Soft Skills Development Programme, Modilipi, Yoga and Account Writing. Most of the students in the Institution come from rural and hilly areas and they do not wish to pursue dual degree.**

**The Institution has been Reaccredited 3rd cycle with grade (CGPA :2.45) by NAAC in the academic year 2020-21 when the Institution had to pass through the hard times because of the inadequate financial assistance and other material things. But after the accreditation by NAAC the Institution has emerged as one of the reputed Institutions in semi-urban area as such, imparting a quality education for all and led it to every door step in rural and hilly area in and around Sangamner. The Teaching fraternity is the real strength of our Institution engaged in curricular, co-curricular, extracurricular, research and extension activities. The Students Community coming from rural and hilly area, are availing all facilities like financial assistance, Physical**

**Tours, and Visits to Industrial area provided by the Institution. The Institution promotes qualitative research culture amongst the teachers and students' community through eminent educationists, scholars, expertise and resource-persons' guidance in National, State Level and University level seminars, workshops and conferences organized by various departments. The extension activities have successfully been carried out throughout the year by the NSS and NCC (Boys & Girls) units. The Institution provides support services for the implementation of academic activities in a well discipline manner and healthy spirit.**

# From Principal's Desk



## **Dr. Dinanath D. Patil** **Principal**

As a matter of fact SBVP Samaj needs no introduction for, it has been functioning as a lighthouse in the field of education since 1965 that was founded by the great visionary, veteran leader and the freedom fighter late. Sahakar Maharshi Bhausaheb Santuji Thorat Dada who had an earnest desire to impart education unto the last. SBVP Samaj and SMBST College, since its inception, has been contributing in the noble cause of education under the competent leadership guidance Hon'ble Minister .

Shri. Balasaheb Thorat and Honourable chairperson and MLC Dr.Sudhir Tambe, who consider education as the key to both individual and social aspirations,we all are striving to achieve the set goals .I believe that primary role of education is to equip people with the knowledge and confidence to make a difference in the transformation of society. In addition to providing students with content knowledge, education helps instil values, attitudes and behaviour that align with those expected in a society. Education is considered the most powerful instrument of social change besides imparting self reliance to the individual .It is through education that the society can bring the desirable changes and modernise itself. Various on-going activities on and off the college campus have revealed the role of college in bringing about social changes. Education is not only aid for individual development, but also for the all-round development of society and country. It helps for the development of the qualities of an individual such as mental and emotional makeup as well as temperament and character . For the individual it provides rational and scientific thinking, reasoning, skills and capabilities to adjust new situations. I am proud that in the academic years 2019-21, the institution has provided an ample opportunities to the students and teachers for serving the nation by actively involving in seminars, conferences, workshops,training sessions and social awareness programmes etc. round the year.

While working on the same line, let us be committed to strive to promote modern values in social economic, political, technological and cultural fields. Therefore, Students and stakeholders' participation in decision-making bodies, adoption of scientific technology in industry, agriculture and other skill based professions will be our priorities for keeping pace with rapidly changing society.. We look forward to the challenging responsibilities that lie ahead, in our efforts at all-round excellence in higher education for our students from diverse socio-economic groups .As success comes to those, who work hard and stays with those who don't rest on the past achievements, we are prepared to undertake the endless journey with new vigour, strength and strong will "To strive, to seek, to find and not to yield"

*Education is not the learning of facts,  
It's rather the training of the mind to think...*

We all believe the twenty first century is an age of Science and technology. Our entire life is surrounded by scientific innovations and modern technologies. Science inventions have made our life more faster and easier. Nowadays, getting information is just a click away. The new inventions in the field of Chemical science, Physical Science, life science ,Information Technology , Medicines ,Agriculture

, Communication has changed the human life completely. Curious minds always search new ideas. We are very much pleased that 'Science Galaxy February 2021' will cater the science learners, the frontiers of science and will prove the best science magazines among them. It is prospered with current news in all over the world. We are very sure that 'Science Galaxy' will be an amazing experience for all. Your valuable words of appreciation and kind suggestions will be greatly appreciated...!

I feel proud of my teachers and students whose creative minds and efforts have resulted this valuable journal.

***Thanks and Regards!***



# Science Association



**Mrs .Lalita M .Mahale  
(Statistics)**



**Ms. Sonal K .Wale  
(Botany)**



**Ms.Pallavi B. Autade  
(Chemistry)**



**Ms. Kanchan S. Ruptake  
(Zoology)**



**Ms. Mayuri S .Karpe  
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# *From Editor's Desk*

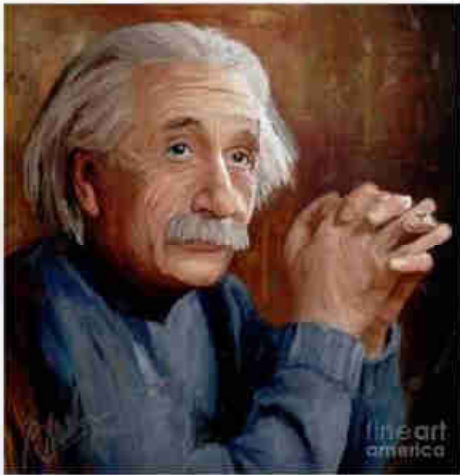
It is a matter of an immense pleasure for me in bringing out third volume of Science News in the form of 'Science Galaxy - March 2021, Women's Day Edition successfully. The thought of extracting worldwide current affairs, new innovative ideas, new inventions, newsletter ...Science Galaxy - March 2021' made it possible with continuous and honest efforts of editorial board. Science Galaxy will introduce you with new research , innovations From all over the world. As an Editor , I am sure it will develop keen interest in reading . I express my sincere regards to Honourable Chairman of the institute —'Sahyadri Bahujan Vidya Prasarak Samaj , Sangamner , and Member of Legislative council Hon. Dr. Sudhirji Tambe.

Further I extend my sincere thanks to Honourable Principal of the college, Dr. Dinanath D. Patil to offer the Opportunity as an Editor of Science Galaxy and encouraging us to work on the idea of monthly science magazine. I am thankful to IQAC co-ordinator Dr. Vilas Kolhe for the valuable Suggestions. I also express sincere thanks to the Vice Principals Mr. G. J. Thorat and Mr. S. D. Navale . I should not forget the strong helping hands of Ms. Sonal Wale , Ms. Pallavi Autade , Ms. Kanchan Ruptake , Ms. Mayuri Karpe, the members of Science Association and my dear students Ms. Snehal Shinde , Ms. Vidya Phapale to edit Science Galaxy beautifully as well , Ms. Rida Maniyar , Ms. Saniya Shaikh, Ms. Bhumika Shelake , Ms. Dipali Shinde to provide information in very less time.

## *Thank You!*

# Page of the Month

14th march special date for science!



**Albert Einstein**

(14, March 1879 - 18, April 1955)

**Nobel Prize in Physics ,1921**

**(Photoelectric effect)**

**Famous for Mass- Energy**

**Equivalence equation**



**Stephen Hawking**

(8 January 1942 - 14 March 2018)

**Albert Einstein Award 1978**

**Known for-**

**Hawking Radiation**

**:Brief History on**

**Time**



**Mathematical Constant Pi**

**Significance : 3,1,4 are the three most significant figures of Pi in its decimal representation.**

**Uses: Area of Circle , Circumference and in many more formulae in Mathematics**

**Properties : Irrationality, Transcendence**



# *Crown and Glories of Science*



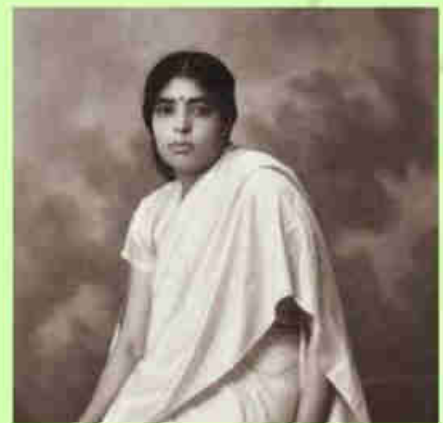
**Marie Pierre Curie**  
**Chemistry, Physics**



**Irene Currie**  
**Chemistry**



**Katherine Johnson,**  
**Mathematician**



**Janaki Ammal,**  
**Botanist**



# *Crown and Glories of Science*



**Vera Rubin, Astronomer**



**Ada Lovelace, Mathematician**



**Gladys West, Mathematician**



**Flossie Wong-Staal, Virologist  
Molecular Biologist**



**Chien-Shiung Wu, Physicist**



**Rosalind Franklin, Chemist**



Science Galaxy March 20-21

Happy  
Women's  
Day



**THIS WEEK IN  
SCIENCE**

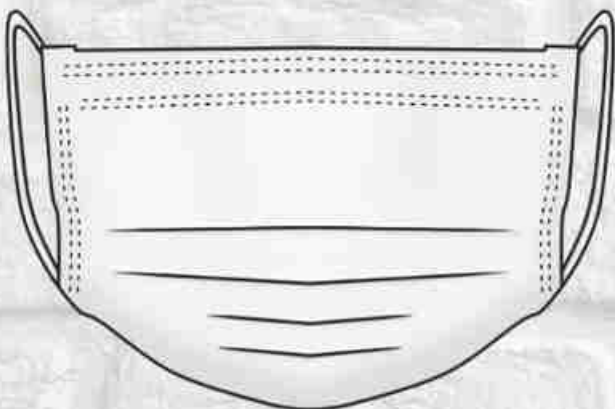
**1 - 7 Mar 20-21**

# Disposable face masks be recycled to make roads , study shows.



University in Melbourne, Australia, have carried out a study to show how disposable face masks could be recycled to make roads.

Their study demonstrated that using the recycled face mask material to make just one km of a two-lane road would use up about 3 million masks, preventing 93 tonnes of waste from going to landfill.

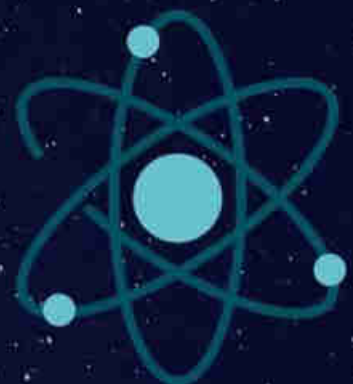
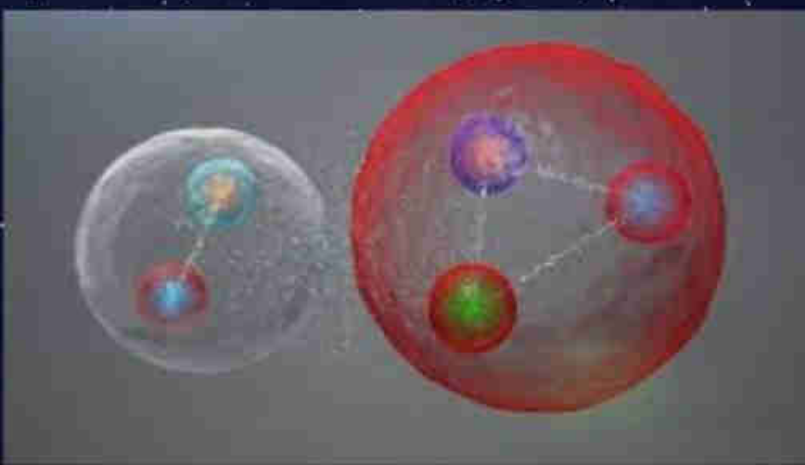


# Physicists Just Found 4 New Subatomic Particles That May Test The Laws of Nature

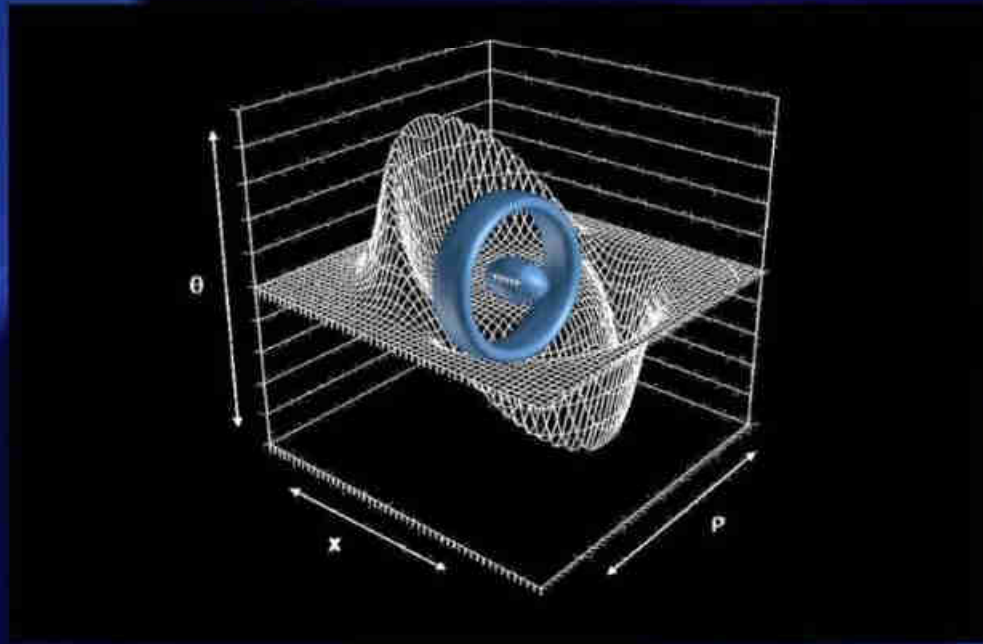
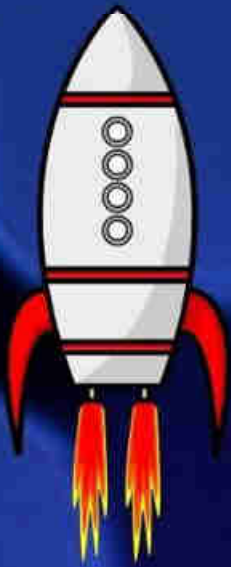


This month is a time to celebrate. CERN has just announced the discovery of four brand new particles at the Large Hadron Collider (LHC) in Geneva.

This means that the LHC has now found a total of 59 new particles, in addition to the Nobel prize-winning Higgs boson, since it started colliding protons – particles that make up the atomic nucleus along with neutrons – in 2009.



# Engineers Have Proposed The First Model For a Physically Possible Warp Drive



The idea of a warp drive taking us across large areas of space faster than the speed of light has long fascinated scientists and sci-fi fans alike. While we're still a very long way from jumping any universal speed limits, that doesn't mean we'll never ride the waves of warped space-time.

Now a group of physicists have put together the first proposal for a physical warp drive, based on a concept devised back in the '90s. And they say it shouldn't break any of laws of physics.



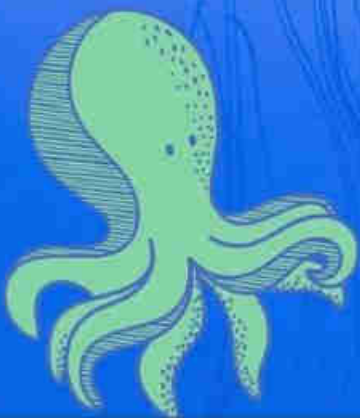
# Octopus feels pain not only physically but also emotionally, in the first study



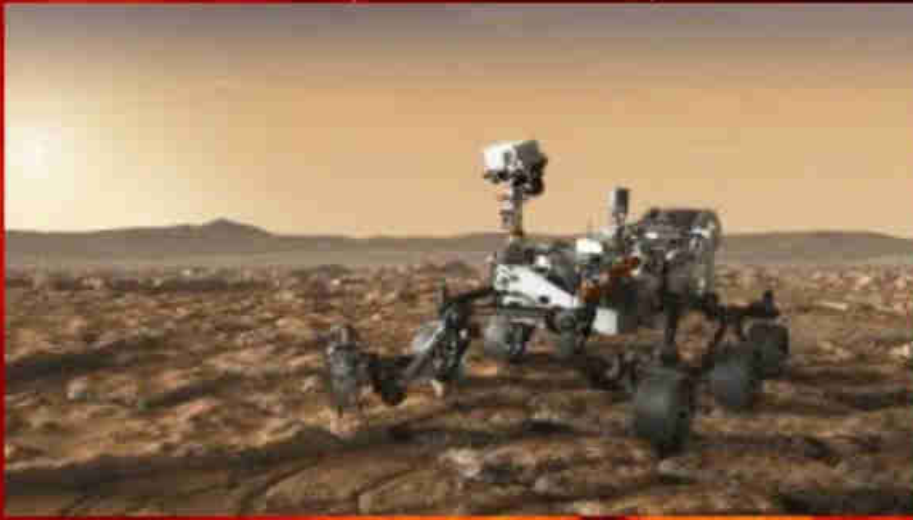
Important new studies suggest that octopuses are as likely to feel and react as mammals. This is the first strong evidence of this ability in invertebrates.

The pain experience is more than just a reflex to harmful stimuli or injuries. It is a complex emotional state that leads to distress and suffering.

Vertebrates are generally thought to experience both physical and emotional aspects of pain, but it is generally unclear whether invertebrates with a much simpler nervous system can do the same.

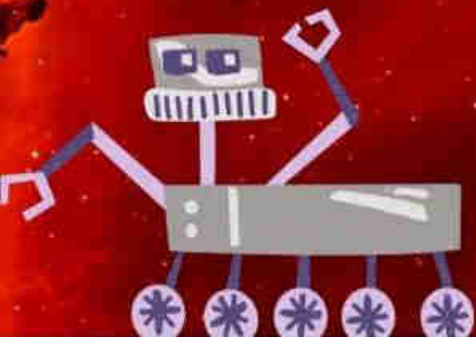


# NASA's Perseverance rover takes its first test drive on Mars



Perseverance, a car-sized rover that landed successfully on the Red Planet Feb. 18, just made its first short drive on Thursday, NASA officials said. The rover moved a total of 21.3 feet (6.5 meters) across the Martian terrain on a drive that took about 33 minutes, during which Perseverance moved forward, turned in place and backed up. The rover drives with a top speed of .01 miles per hour (.016 kilometers).

"Our first drive went incredibly well," NASA's Anais Zarifian, a Perseverance mobility test bed engineer at the Jet Propulsion Laboratory in Pasadena, California. Zarifian added that the rover "works beautifully, we were so excited."



# Vaccinating 300 million people



India has approved two vaccines: The AstraZeneca and Oxford University vaccine, known in the country as Covishield, and one developed locally, called Covaxin.

It aims to vaccinate some 300 million of its citizens by August, starting with healthcare and frontline workers and those aged over 50.

"The scale is, of course, enormous – it is 600 million doses across 36 states," Dr Rajib Dasgupta, a professor of community health at Jawaharlal Nehru University, told AFP.

"What this entails is working out transport, working out what's called cold chain logistics, which is cold chain space, working out additional syringe requirements, additional bio-medical waste disposal requirements, and so on.



# Neanderthals could perceive and produce human speech

**Class:** Mammalia

**Kingdom:** Animalia

**Family:** Hominidae

**Order:** Primates

An extinct species of human that was widely distributed in ice-age Europe between c. 120,000 and 35,000 years ago

Neanderthals are the closest ancestors to modern humans before they died out around 40,000 years ago. While many perceive them to be primitive cave men who could only grunt, that could be about to change thanks to a landmark study. Researchers used high resolution CT scans to determine that Neanderthals could produce and perceive speech.

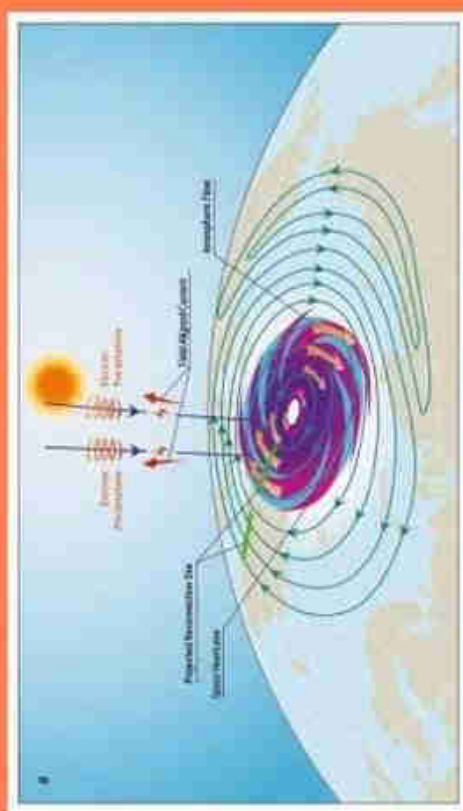
A bird last seen more than 170 years ago in the rainforests of Borneo has been rediscovered, amazing conservationists who have long assumed it was extinct.



The Black-browed Babbler has only ever been documented once -- when it was first described by scientists around 1848 -- eluding all subsequent efforts to find it.

But late last year, two men in Indonesian Borneo saw a bird they didn't recognise and snapped photos of it before releasing the palm-sized creature back into the forest, according to Global Wildlife Conservation, a non-profit organization that works towards the conservation of endangered species

# **ASTRONOMERS DETECT THE FIRST-EVER 'SPACE HURRICANE' OVER THE NORTH POLE. THE POWERFUL HURRICANE OF PLASMA OCCURRED IN EARTH'S UPPER ATMOSPHERE**



, for eight hours. These hurricanes, which "rained" electrons, are known to occur in Earth's lower atmosphere. They had never been detected earlier in the upper atmosphere.

The space hurricane was detected on August 20, 2014. The phenomenon was noticed during a retrospective analysis led by the researchers at the Shandong University in China. The findings were published in Nature Communications in February this year.

A team of scientists from China, the USA, Norway and the UK used observations made by four DMSP (Defense Meteorological Satellite Program) satellites and a 3D magnetosphere modelling to produce an image of the space hurricane.

# SPACEX STARSHIP PROTOTYPE SN10 LANDED SUCCESSFULLY AFTER A HIGH- ALTITUDE TEST, THEN EXPLODED ABOUT 8 MINUTES AFTER LANDING



WAS THE THIRD HIGH-ALTITUDE TEST FLIGHT FOR A STARSHIP VEHICLE BUT THE FIRST TO FEATURE A SUCCESSFUL LANDING. SN10'S TWO IMMEDIATE PREDECESSORS, SN8 AND SN9, FLEW WELL DURING THEIR JAUNTS — ON DEC. 9, 2020 AND FEB. 2 OF THIS YEAR, RESPECTIVELY — BUT BOTH HIT THE GROUND HARD AND ENDED UP IN PIECES.

"THIRD TIME'S A CHARM, AS THE SAYING GOES," SPACEX PRINCIPAL INTEGRATION ENGINEER JOHN INSPRUCKER SAID DURING SPACEX'S LAUNCH WEBCAST TODAY. "WE'VE HAD A SUCCESSFUL SOFT TOUCHDOWN ON THE LANDING PAD THAT'S CAPPING A BEAUTIFUL TEST FLIGHT OF STARSHIP 10."

BUT THAT WASN'T THE END OF THE STORY. SOME FLAMES WERE VISIBLE NEAR SN10'S BASE SHORTLY AFTER LANDING, AND THAT WAS A SIGN OF THINGS TO COME: THE VEHICLE EXPLODED ON THE LANDING PAD AT ABOUT 6:30 P.M. EST (2330 GMT), RISING UP AND CRASHING DOWN AGAIN IN A HUGE FIREBALL.

Science Galaxy March 20-21

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**THIS WEEK IN  
SCIENCE**

**8 - 14 Mar 20-21**



# All you need to know about herd immunity



Health officials around the world are racing to vaccinate enough people to stop the spread of Covid-19, but what qualifies as ‘enough’ is still an open question. Herd immunity is achieved when enough people have immunity, either from vaccination or past infection, to stop the uncontrolled spread. It doesn't make any one person immune, and outbreaks can still flare-up.

How do we know we've reached herd immunity?

Proof that we're nearing herd immunity would be a ‘disruption in the chain of transmission,’ according to an expert. In India, more people will need to be protected in densely populated cities, where the virus spreads faster

Add a little bit of body text

# UK man becomes second person cured of HIV after 30 months virus-free



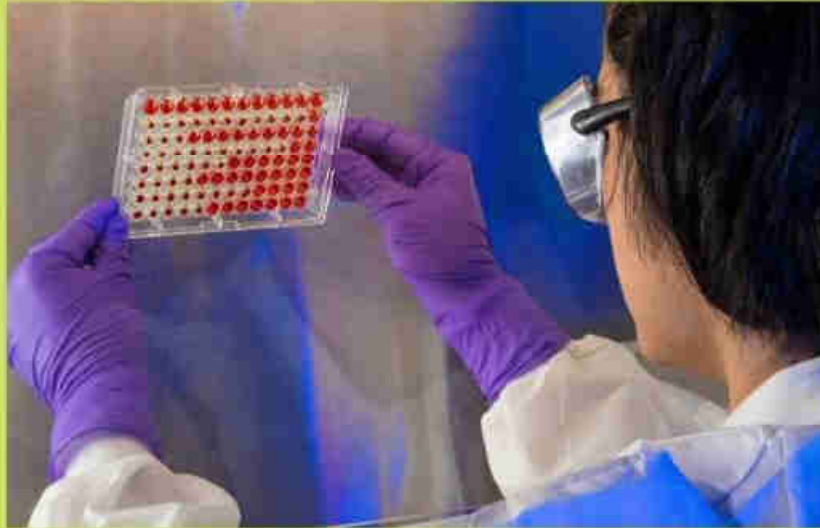
A man in London appears to be the second person ever cured of HIV, his doctors said.

The man — whose case was first announced a year ago — has now been HIV-free for 30 months without the need for antiviral medications, according to a new report published Tuesday (March 10) in the journal *The Lancet HIV*.

Previously known only as the "London patient," the man revealed his identity on Monday (March 9). He is Adam Castillejo, a 40-year-old who was first diagnosed with HIV in 2003, according to *The New York Times*.

Last year, researchers reported that Castillejo had experienced "long-term remission" from the virus after undergoing a special bone-marrow transplant. At that time, Castillejo had been HIV-free for 18 months. Now, 12 months later, his doctors are more sure that his case does indeed represent a cure.

# Scientists discover natural protein that stops allergies and autoimmune conditions



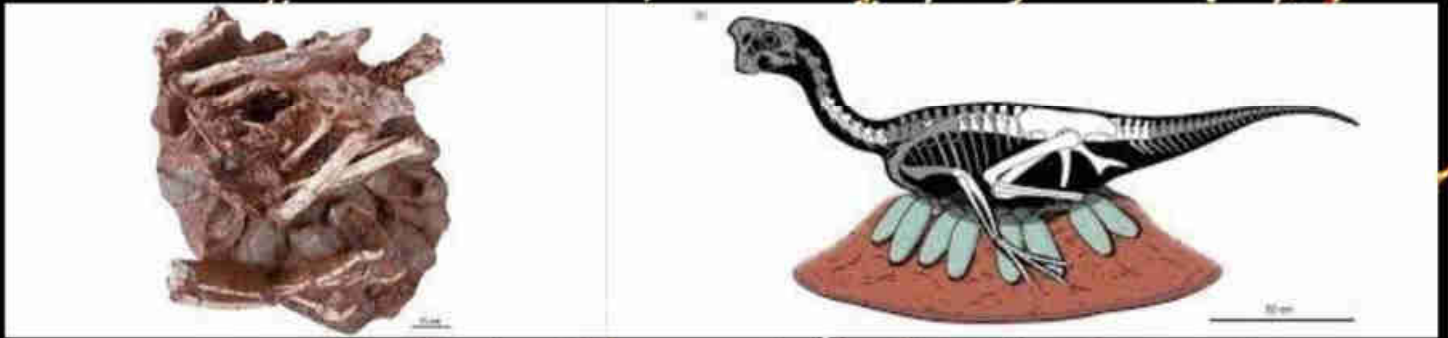
Scientists have discovered a natural protein that stops allergies and autoimmune conditions, in a recent study.

The research published in the journal *Cell* on Thursday describes in detail a natural way the body prevents autoimmune disease and allergies. The process is driven by a protein in the body called neuritin.

Professor Carola Vinuesa from the Australian National University said, "We found this absolutely fascinating mechanism of our own bodies that stops the production of rogue antibodies that can cause either autoimmunity or allergies."

"It's been known for years that neuritin has a role in the brain and in the nervous system but we found an abundance of neuritin in the immune system and its mechanism - which has never been described in biology.

# Researchers discover preserved dinosaur sitting on nest of eggs with fossilized embryos



The fossil of what is believed to be an adult oviraptorid can be seen hunched over 24 eggs or more, at least seven of which preserved the bones of the partial embryos found inside, the researchers said in the journal.

Some of the embryos in the eggs were visible as well the "forearms, pelvis, hind limbs, and partial tail of the adult," CMNH said.

"The late stage of development of the embryos and the close proximity of the adult to the eggs strongly suggests that the latter died in the act of incubating its nest, like its modern bird cousins, rather than laying its eggs or simply guarding its nest crocodile-style, as has sometimes been proposed for the few other oviraptorid skeletons that have been found atop nests," CMNH said.

The discovery uncovered multiple details about the species, including that dinosaurs were nurturing to their offspring.

# Electric stimulation may be able to help blood vessels carry white blood cells and oxygen to wounds, speeding the healing process.



The electrical stimulation provided a constant voltage with an accompanying electric current in the presence of fluid flow. The findings indicate that stimulation increases the permeability of the blood vessel -- an important characteristic that can help wound-healing substances in the blood reach injuries more efficiently. "There was this speculation that blood vessels could grow better if you stimulated them electrically," said Shaurya Prakash, senior author of the study and associate professor of mechanical and aerospace engineering at The Ohio State University. "And we found that the response of the cells in our blood vessel models shows significant promise towards changing the permeability of the vessels that can have positive outcomes for our ongoing work in wound healing."

Blood vessels are crucial for wound healing: They thread throughout your body, carrying nutrients, cells and chemicals that can help control inflammation caused by an injury. Oxygen and white blood cells -- which protect the body from foreign invaders -- are two key components delivered by blood vessels.

# More Than 400 Million Shots Given



The biggest vaccination campaign in history is underway. More than 400 million doses have been administered across 132 countries, according to data collected by Bloomberg. The latest rate was roughly 9.64 million doses a day.

In the U.S., more Americans have received at least one dose than have tested positive for the virus since the pandemic began. So far, 113 million doses have been given. In the last week, an average of 2.47 million doses per day were administered.

# Scientists have unlocked the secrets of ancient antikythera mechanism which is considered to be part of the world's first computer



A 2,000-year-old device often referred to as the world's oldest "computer" has been recreated by scientists trying to understand how it worked.

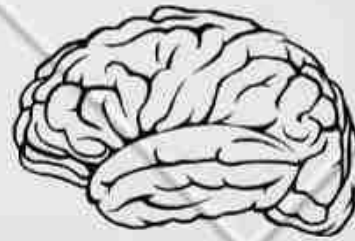
The Antikythera Mechanism has baffled experts since it was found on a Roman-era shipwreck in Greece in 1901.

The hand-powered Ancient Greek device is thought to have been used to predict eclipses and other astronomical events.

But only a third of the device survived, leaving researchers pondering how it worked and what it looked like.

The back of the mechanism was solved by earlier studies, but the nature of its complex gearing system at the front has remained a mystery.

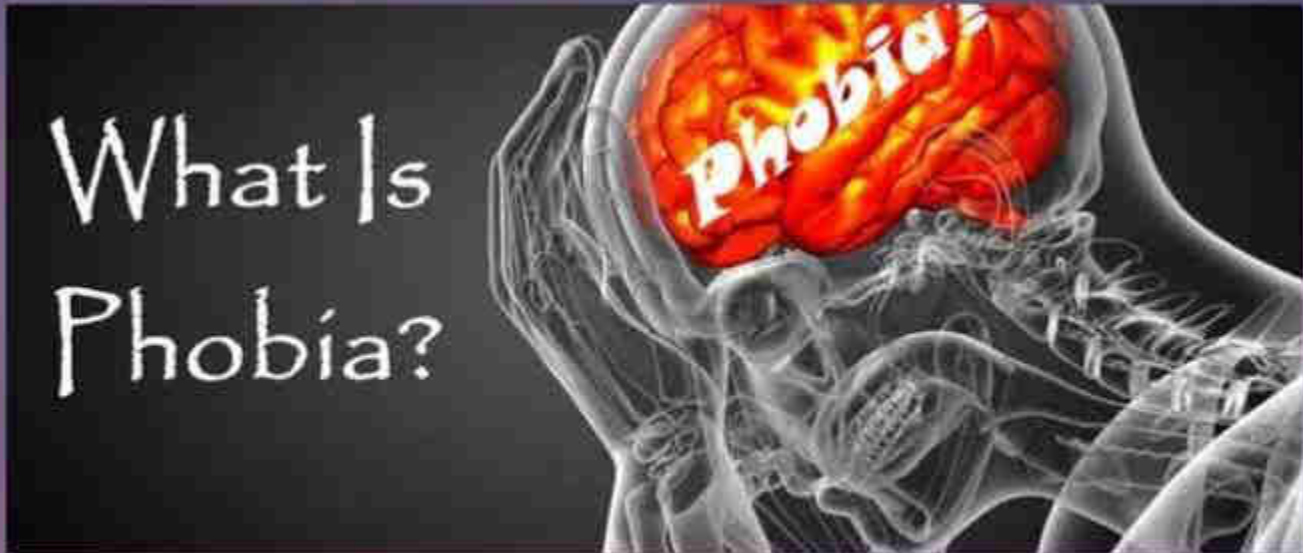
# **A single head injury could lead to dementia later in life , study reveals. This risk increases depend on the number of sustsined head injury**



Head injury in the United States is common, with over 23 million adults age 40 or older reporting a history of head injury with loss of consciousness. Many head injuries can be caused by a host of different situations -- from car and motorcycle accidents to sports injuries. What's more, it has become increasingly recognized that the effects from head injuries are long-lasting. New research led by the Perelman School of Medicine at the University of Pennsylvania shows that a single head injury could lead to dementia later in life. This risk further increases as the number of head injuries sustained by an individual increases. The findings also suggest stronger associations of head injury with risk of dementia among women compared to among men and among white as compared to among Black populations.



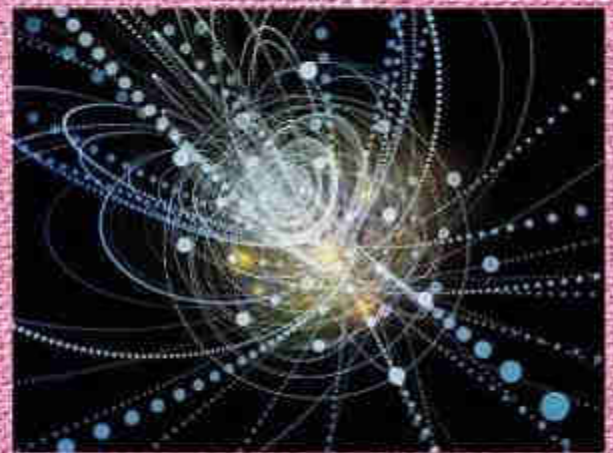
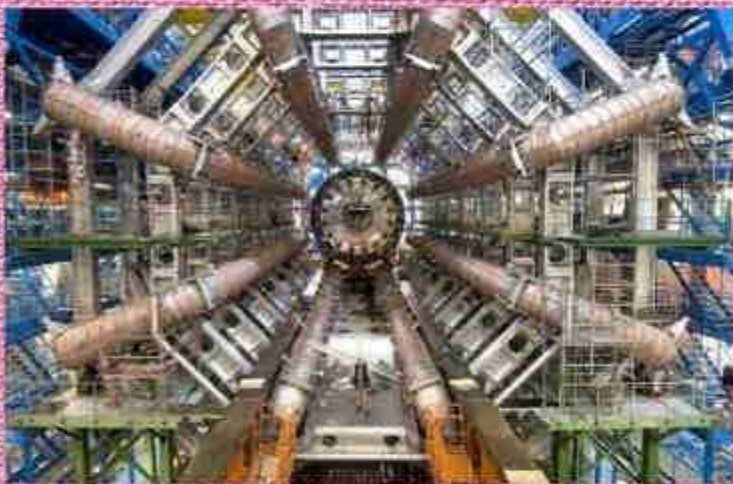
# Breakup-induced confusion about one's self-identity helps explain the desire to get back together with an ex-partner



Romantic breakups can shake our sense of identity. After the dissolution of a relationship, people can feel as if a part of themselves has gone missing. New research published in the *Journal of Social and Personal Relationships* suggests that this experience is related to desires to rekindle a former relationship among anxiously attached individuals.

"Although we may not want them to, romantic relationships often end, eliciting a range of emotions. Commonly these emotions are negative and range from moderate emotional discomfort to severe distress," said study author Morgan A. Cope, a graduate student at Florida Atlantic University.

## Faster-Than-Light Travel Is Possible Within Einstein's Physics, Astrophysicist Shows



For decades, we've dreamed of visiting other star systems. There's just one problem – they're so far away, with conventional spaceflight it would take tens of thousands of years to reach even the closest one.

Physicists are not the kind of people who give up easily, though. Give them an impossible dream, and they'll give you an incredible, hypothetical way of making it a reality.

Maybe.

In a new study by physicist Erik Lentz from Göttingen University in Germany, we may have a viable solution to the dilemma, and it's one that could turn out to be more feasible than other would-be warp drives.

This is an area that attracts plenty of bright ideas, each offering a different approach to solving the puzzle of faster-than-light travel: achieving a means of sending something across space at superluminal speeds.

Science Galaxy March 20-21

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**THIS WEEK IN  
SCIENCE**

**15 - 21 Mar 20-21**

# Moderna begins testing its COVID-19 vaccine on babies and young children. 6,750 healthy pediatric are expected to enroll in phase 2/3.



The drug company Moderna has begun a study that will test its Covid vaccine in children under 12, including babies as young as six months, the company said on Tuesday.

The study is expected to enroll 6,750 healthy children in the United States and Canada. Moderna declined to say how many had already signed up or received the first shots, according to a spokeswoman, Colleen Hussey.

“There’s a huge demand to find out about vaccinating kids and what it does,” said Dr. David Wohl, the medical director of the vaccine clinic at the University of North Carolina, who is not involved the study.

In a separate study, Moderna is testing its vaccine in 3,000 children ages 12 to 17, and may have results for that age group by summer. The vaccine would then have to be authorized for use in children, so it would not be immediately available.

# A psychoactive compound found in marijuana can stay in breast milk for up to six weeks, according to new study.

As cannabis becomes legal for medical and recreational purposes in various states across the country, more and more moms are using the plant for a variety of benefits, from stress to pain relief. At the same time, new research on smoking marijuana and breastfeeding is being conducted, helping to inform nursing moms' decisions around cannabis use. Here, seven of the latest facts on marijuana and breast milk.

It is possible to pass low levels of the psychoactive ingredient tetrahydrocannabinol (THC) to your baby via breast milk. A study published in the journal *Obstetrics and Gynecology* in April looked at samples of breast milk from eight anonymous test subjects who regularly use cannabis. They tested the milk 20 minutes after ingestion and then at one, two, and four hours post-ingestion. Babies who were three to five months old and who were breastfed exclusively ingested an estimated 2.5 percent of the maternal dose of THC, according to

<https://www.aninews.in/videos/health/research-shows-marijuana-the-stays-breast-milk-six-weeks/>

# Scientists want to store DNA of 6.7 million species on the moon, just in case

**A "lunar ark" hidden inside the moon's lava tubes could preserve the sperm, eggs and seeds of millions of Earth's species, a group of scientists has proposed.**

**The ark, or gene bank, would be safely hidden in these hollowed-out tunnels and caves sculpted by lava more than 3 billion years ago and would be powered by solar panels above. It would hold the cryogenically preserved genetic material of all 6.7 million known species of plants, animals and fungi on Earth, which would require at least 250 rocket launches to transport to the moon, according to the researchers. Scientists believe the endeavor could safeguard our planet's wildlife against both natural and human-caused apocalyptic scenarios, such as a supervolcano eruption or a nuclear war, and ensure the survival of their genes.**

# Microbes Unknown to Science Discovered on The International Space Station



The menagerie of bacterial and fungal species living among us is ever growing - and this is no exception in low-gravity environments, such as the International Space Station (ISS). Researchers from the United States and India working with NASA have now discovered four strains of bacteria living in different places in the ISS – three of which were, until now, completely unknown to science.

Three of the four strains were isolated back in 2015 and 2016 – one was found on an overhead panel of the ISS research stations, the second was found in the Cupola, the third was found on the surface of the dining table; the fourth was found in an old HEPA filter returned to Earth in 2011.

All four of the strains belong to a family of bacteria found in soil and freshwater; they are involved in nitrogen fixation, plant growth, and can help stop plant pathogens. Basically, good bacteria to have around if you're growing things.

# COVAX Announces additional deals to access promising COVID-19 vaccine candidates

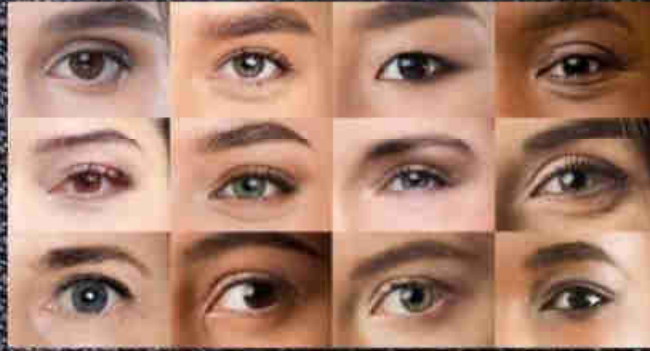


COVAX, the global initiative to ensure rapid and equitable access to COVID-19 vaccines for all countries, regardless of income level, today announced that it had arrangements in place to access nearly two billion doses of COVID-19 vaccine candidates, on behalf of 190 participating economies. For the vast majority of these deals, COVAX has guaranteed access to a portion of the first wave of production, followed by volume scales as further supply becomes available. The arrangements announced today will enable all participating economies to have access to doses in the first half of 2021, with first deliveries anticipated to begin in the first quarter of 2021 – contingent upon regulatory approvals and countries' readiness for delivery.

Given these are arrangements for 2 billion doses of vaccine candidates which are still under development, COVAX will continue developing its portfolio: this will be critical to achieve its goal of securing access to 2 billion doses of safe and effective, approved vaccines that are suitable for all participants' contexts, and available by the end of 2021.



# Researchers have identified 50 new genes for eye color in a study involving the genetic analysis



An international team of researchers led by King's College London and Erasmus University Medical Center Rotterdam have identified 50 new genes for eye colour in the largest genetic study of its kind to date. The study, published today in *Science Advances*, involved the genetic analysis of almost 195,000 people across Europe and Asia.

These findings will help to improve the understanding of eye diseases such as pigmentary glaucoma and ocular albinism, where eye pigment levels play a role.

In addition, the team found that eye colour in Asians with different shades of brown is genetically similar to eye colour in Europeans ranging from dark brown to light blue.

This study builds on previous research in which scientists had identified a dozen genes linked to eye colour, believing there to be many more. Previously, scientists thought that variation in eye colour was controlled by one or two genes only, with brown eyes dominant over blue eyes

# Due to deforestation an endangered Regent Honeyeater birds are forgetting how to sing.

New study suggests young regent honeyeaters are not getting the chance to learn mating calls



The critically endangered regent honeyeater is losing its "song culture" due to the bird's rapidly declining population, according to new research from The Australian National University (ANU). Just like humans learning to speak, many birds learn to sing by associating with older birds of the same species. They risk losing this skill if adults become too rare. And if they don't learn to sing a enough song, their chances of mating are reduced. Populations have reached such low numbers that young males are not getting a chance to learn mating calls from other adults.

# **IBM DEVELOPS ARTIFICIAL INTELLIGENCE SYSTEM THAT CAN DEBATE HUMANS**

The IBM research lab in Haifa has trained its newest autonomous AI model, Project Debater, to debate complex human issues in front of a live audience.



In a podcast interview published by Scientific American on Wednesday, Project Debater's principal investigator Noam Slonim explained how the AI machine gathers its information for the debate.

The system can analyze upwards of 400 million newspaper articles in just the time it takes to drink a cup of coffee! From that database of information, Project Debater fishes out texts that discuss its desired topic, are "argumentized in nature" and support its side of the debate. Logos is the factual evidence upon which the argument is based.

# Scientists determine the origin of extra-solar object 'Oumuamua'

A piece of an extrasolar Pluto may have passed through our cosmic neighborhood, a new study suggests.



- **Discovery date:** 19 October 2017
- **Discovered by:** Robert Weryk

In 2017, the first interstellar object from beyond our solar system was discovered via the Pan-STARRS astronomical observatory in Hawaii. It was named 'Oumuamua, meaning "scout" or "messenger" in Hawaiian. The object was like a comet, but with features that were just odd enough to defy classification.

## Could 'Oumuamua have been alien technology?

Although there is no evidence that it is alien technology, as a fragment of a Pluto-like planet, 'Oumuamua has provided scientists with a special opportunity to look at extrasolar systems in a way that they have not been able to before.

Science Galaxy March 20-21

Happy  
Women's  
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**THIS WEEK IN  
SCIENCE**

**22 - 28 Mar 20-21**

# **Vaccinated mothers pass covid-19 antibodies to babies in utero and through breastmilk, early studies show**



Pregnant women who receive a coronavirus vaccine not only acquire protective antibodies against the virus for themselves but also may pass along immunity to their babies, emerging research shows.

Several preliminary studies suggest that women who received an mRNA vaccine such as Moderna or Pfizer during pregnancy had covid-19 antibodies in their umbilical cord blood. One of the studies also detected antibodies in their breastmilk, indicating that at least some immunity could be transferred to babies both before and after birth.

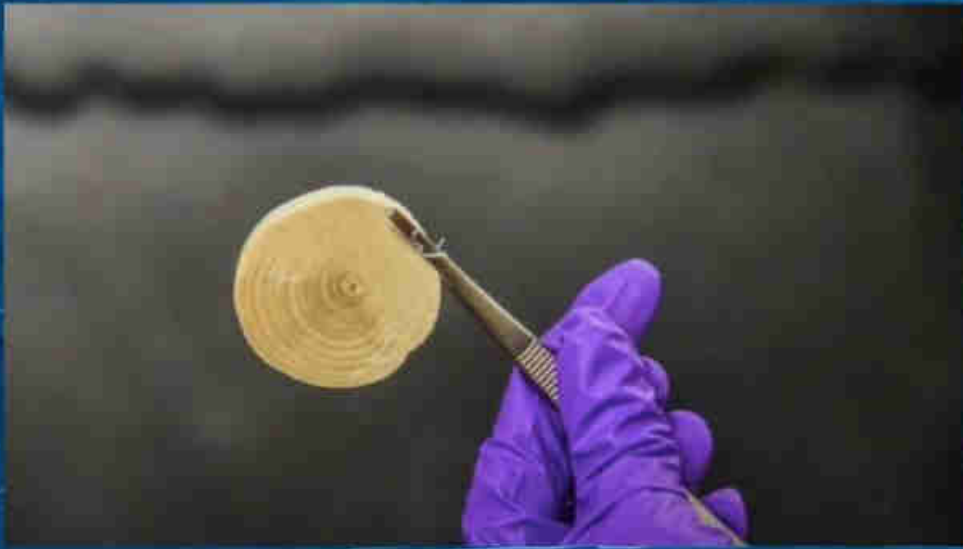
# Sleeping octopuses might experience fleeting dreams - new study



A couple of years ago an octopus named Heidi was filmed changing colours as she slept. The footage shows her flickering from a ghostly shade of white to yellow and then turning a deep shade of burgundy before morphing into a mottled green pattern.

The video went viral. Millions were instantly mesmerised by Heidi in her slumber, particularly because the narrator speculates that she's having a vivid dream - dreaming that she's hunting and eating a crab, like a snoozing dog chasing "dream rabbits". Was Heidi really hunting "dream crabs"? Or was she simply experiencing a muscle twitch that controls her colour-changing skin cells? The video footage is only one piece of the puzzle. We need to know more about an octopus's sleep patterns to understand what was causing Heidi's colourful slumber.

# New Natural Wood Filters Remove 99% of Bacteria in Contaminated Water



An estimated 790 million of the world's population which corresponds to around 11 percent don't have access to a clean water supply. Many organizations and companies are working on ways to minimize these numbers, and one such team is made up of MIT researchers.

The researchers have come up with a brilliantly simple and natural solution: wood. More specifically, turning nonflowering trees, such as pine, into water filters.

New prototypes were created and tested in real-world situations in India, where over 160 million people lack access to safe and reliable drinking water. It turns out MIT's xylem filters are capable of removing bacteria such as *E. coli* and rotavirus — one of the most common causes of diarrhea.



# African elephants face extinction due to poaching, shrinking habitats

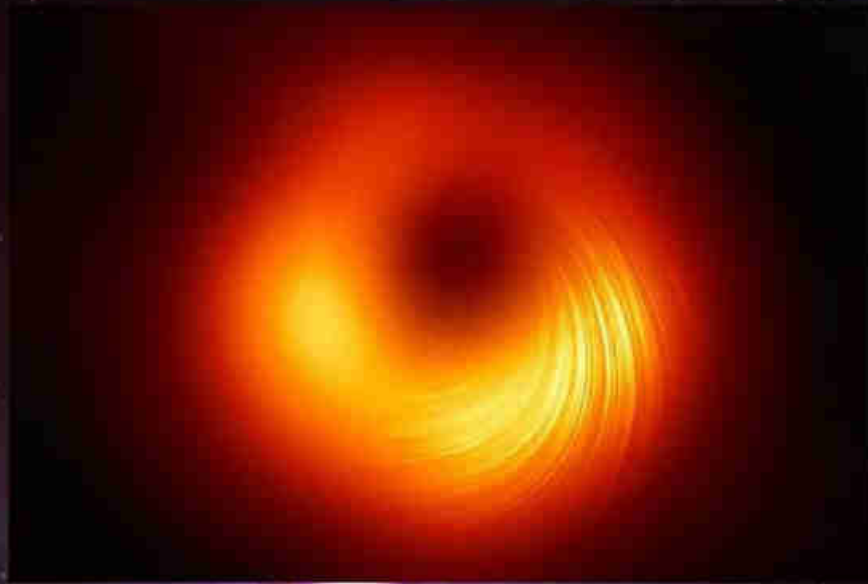


African elephant populations have decreased dramatically over the past decades, due to the illegal ivory trade and habitat loss, an NGO has said. Conservationists have said only 415,000 elephants remain on the continent

African elephant populations have decreased dramatically over the past decades, due to the illegal ivory trade and habitat loss, an NGO has said. Conservationists have said only 415,000 elephants remain on the continent

There are currently 415,000 elephants across the African continent, according to the IUCN. The African forest elephant is classified as "critically endangered," the highest threat level before extinction, while the larger savanna elephant is "endangered."

# New picture of famous black hole reveals its swirling magnetic field



The first picture of a black hole's shadow just got even more interesting. The Event Horizon Telescope (EHT) collaboration released the first direct image of a black hole in 2019, and while the picture on its own was impressive, it wasn't the scientific smorgasbord some had hoped for. Now, researchers have added polarised light to the picture, giving us an idea of how magnetic fields around a supermassive black hole create powerful jets of matter.

"It was not a lot of information about the actual physics of the gas around the black hole," says Sara Issaoun, an EHT team member at Radboud University in the Netherlands. "Looking at it in polarised light told us information about the magnetic field of the black hole."

# More Than 590 Million Shots Given: Covid-19 Tracker



biggest vaccination campaign in history is underway. More than **590 million doses** have been administered across 141 countries, according to data collected by Bloomberg. The latest rate was roughly **15.3 million doses a day**.

In the U.S., more Americans have received at least one dose than have tested positive for the virus since the pandemic began. So far, **150 million doses** have been given. In the last week, an average of **2.83 million doses per day** were administered.

## World Map of Vaccinations

More than 590 million doses have been administered —enough to vaccinate 3.9% of the global population

- no data 0151020% of population covered

# Therapeutic vaccines for malignant brain tumors



Malignant gliomas are the most common and aggressive form of brain tumors. Current therapy consists of surgical resection, followed by radiation therapy and concomitant chemotherapy. Despite these treatments, the prognosis for patients is poor. As such, investigative therapies including tumor vaccines have targeted this devastating condition. Recent clinical trials involving immunotherapy, specifically dendritic cell (DC) based vaccines, have shown promising results. Overall, these vaccines are well tolerated with few documented side effects. In many patients receiving vaccines, tumor progression was delayed and the median overall survival of these patients was prolonged. Despite these encouraging results, several factors have limited the efficacy of DC vaccines. Here we discuss the potential of DC vaccines as adjuvant therapy and current obstacles of generating highly pure and potent DC vaccines in the context of malignant glioma. Taken together, the results from earlier clinical studies justify additional clinical trials aimed at improving the efficacy of DC vaccines.

# Semi-Transparent Solar Cells Can Power Greenhouses Without Stunting Plant Growth



Greenhouses fitted with semi-transparent solar cells can generate electricity without affecting the growth and health of the plants inside, according to a new study, suggesting we could build energy-neutral greenhouses with

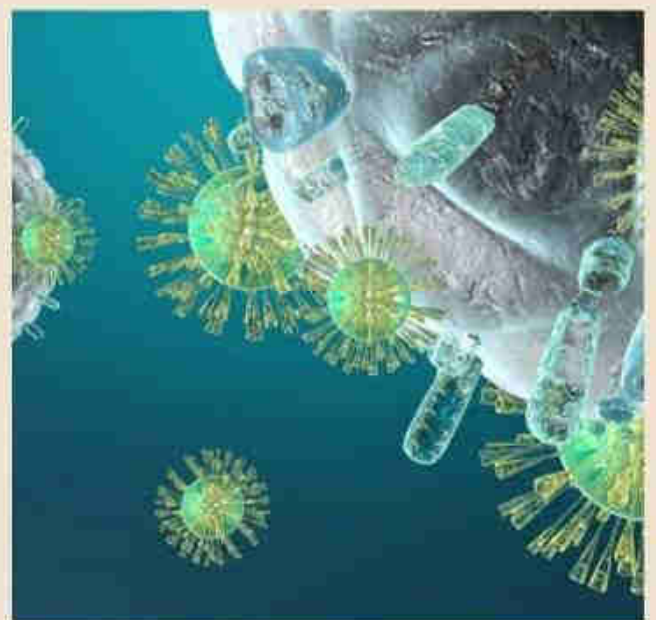
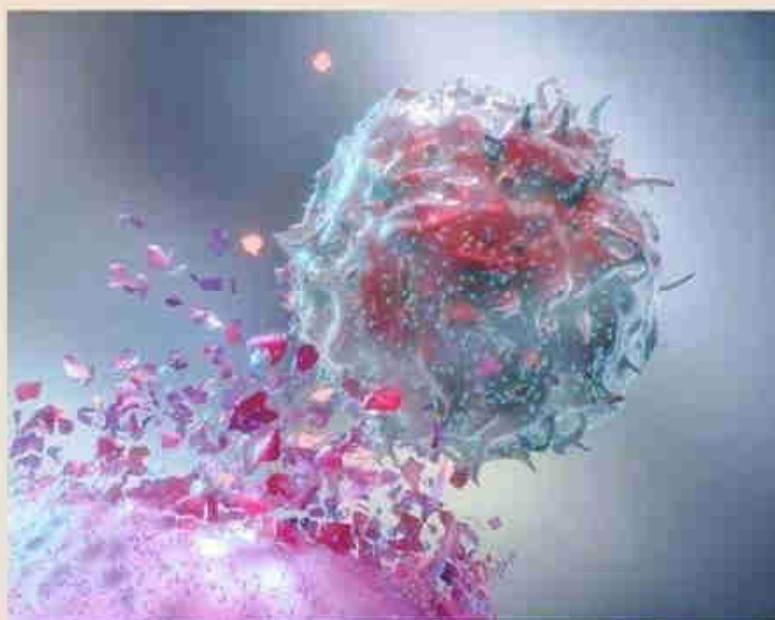
Researchers tested groups of red leaf lettuce under different types of glass and different wavelengths of light, keeping all other variables the same – including temperature, CO<sub>2</sub> concentration, and supplies of water and fertilizer.



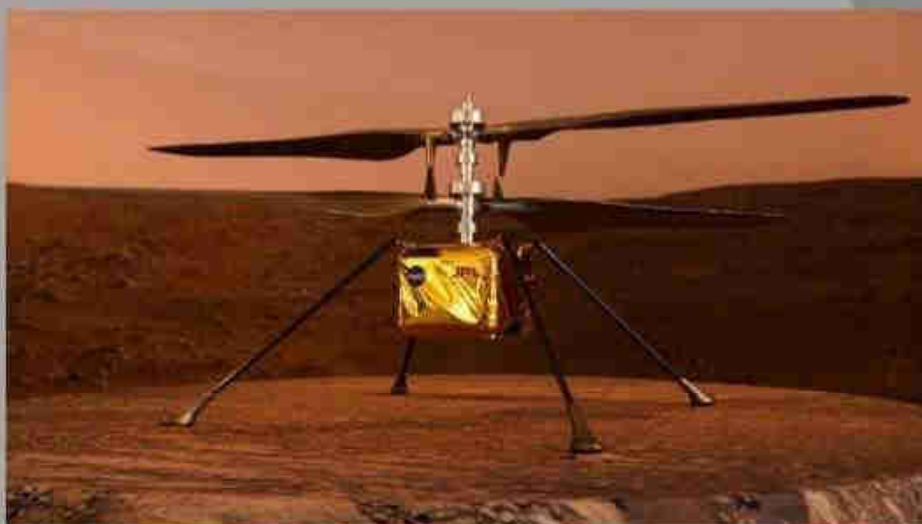
# Engineered immune cells deliver anticancer signal, prevent cancer from spreading



Scientists have genetically engineered immune cells, called myeloid cells, to precisely deliver an anticancer signal to organs where cancer may spread. In a study of mice, treatment with the engineered cells shrank tumors and prevented the cancer from spreading to other parts of the body. The study, led by scientists at the National Cancer Institute's (NCI) Center for Cancer Research, part of the National Institutes of Health, was published March 24, 2021, in *Cell*.



# Ingenuity helicopter preprepares fortakeoff , for the first time ever humans will test powered , controlled flight on anoter planet



Beginning April 2021, the window opens for the first flight of NASA's Ingenuity Mars Helicopter. It will be history's first attempt at powered, controlled flight on another planet. Ingenuity arrived at Mars on February 18, 2021, riding along with NASA's Perseverance rover. Before it attempts takeoff, the Mars Helicopter must first survive the arduous journey to Mars – from the turbulent liftoff to the harrowing landing – as well as dangerously cold nights where it must maintain power to keep itself warm enough to operate. The duration of Ingenuity's mission is 30 days, where one or more test flights will be attempted.



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