



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



Srinivasa Ramanujan

SCIENCE GALAXY

APRIL 2021

**The seeds from Ramanujan's garden have been
blowing on the wind and have been sprouting all
over the landscape**

About The College



Sahakar Maharshi Bhausaheb Santuji Thorat College of Arts Science and Commerce, Sangamner, Affiliated to Sovitribai 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
(Physics)

Editors



Ms. Meghana Sapana
Sahebrao Chavanke

T.Y.B.Sc.(Computer Science)



Ms. Shradha Sulochana
Annasaheb Aher

T.Y.B.Sc.(Computer Science)



Ms. Fiza Tasleem
Rashid Shaikh

T.Y.B.Sc.(Zoology)



Mr. Vishal Meena
Ramesh Devgire

T.Y.B.Sc.(Chemistry)



Ms. Nikita Nanda
Rohidas Rahane

F.Y.B.Sc.(Physics)



Ms. Kanchaneshwari
Surekha Keruji Shinde

T.Y.B.Sc.(Botany)

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 - April 2021 successfully. The thought of extracting worldwide current affairs, new innovative ideas, new inventions, newsletter ...Science Galaxy - April 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 Associaton and my dear students Ms. Meghana Chavanke , Ms. Shraddha Aher to edit Science Galaxy beautifully as well ,Ms. Fiza Shaikh , Mr. Vishal Devgire, Ms. Nikita Rahane , Ms. Kanchaneshwari Shinde to provide information in very less time.

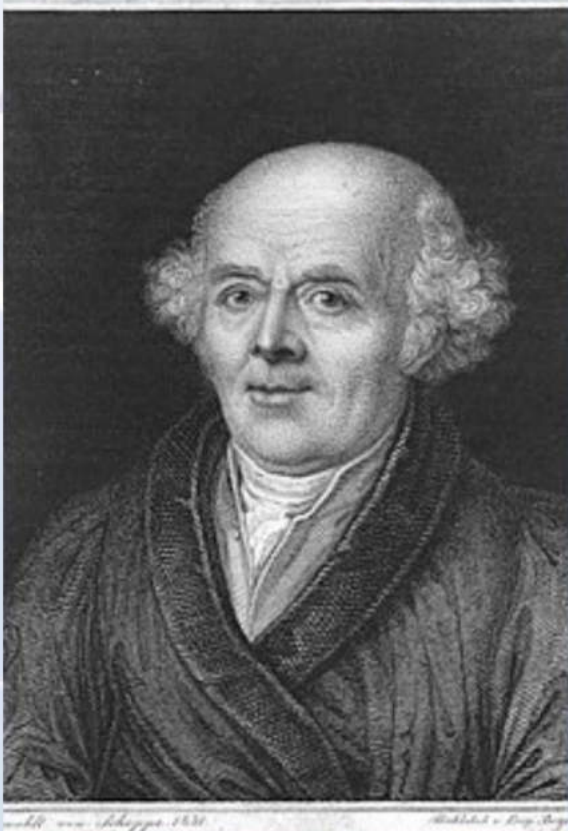
Thank You!

Page of the Month



Srinivasa Ramanujan

**22 December 1887-
26 April 1920**



Samuel Hahnemann

**10 April 1755-
2 July 1843**



Science Galaxy

March 20-21

**THIS WEEK IN
SCIENCE**

**29 March - 4 April
20-21**



Sunlight inactivates the coronavirus 8 times faster than previously thought

"The theory assumes that inactivation works by having UVB hit the RNA of the virus, damaging it," explained Luzzatto-Fegiz. However, the inconsistency suggests there's something more going on than that, and figuring out what is necessary as it can help manage the virus.



According to the researchers, there are certain nucleic acid bases in DNA and RNA which can easily absorb UV light or the ultraviolet part of the spectrum. It can cause them to bond in ways that are hard to fix.

Scientists collect DNA from air for the first time ever



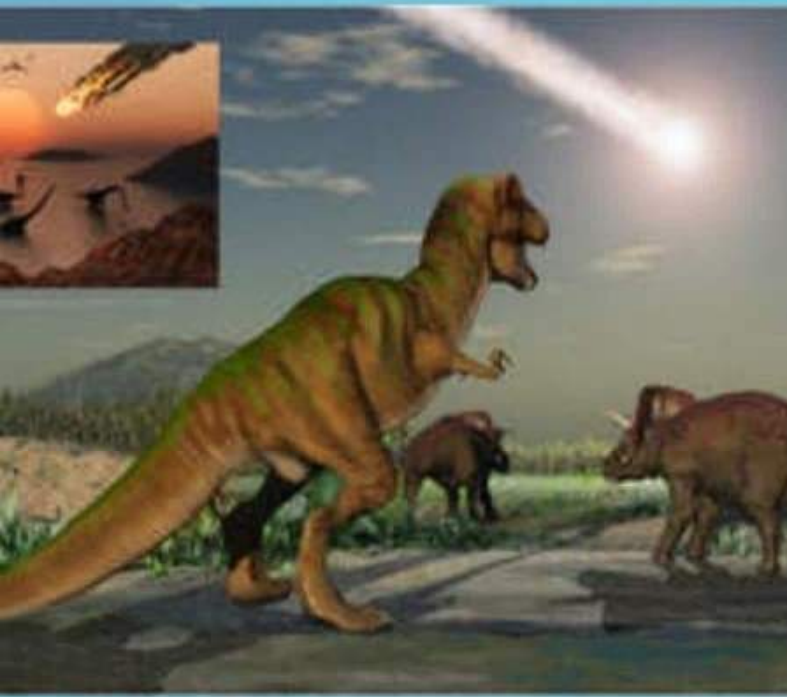
Living organisms such as plants and animals shed DNA into their surrounding environments as they interact with them.

Airborne transmission of SARS-CoV-2 can occur during medical procedures that generate aerosols (“aerosol generating procedures”



Transmission of SARS-CoV-2 can occur through direct, indirect, or close contact with infected people through infected secretions such as saliva and respiratory secretions or their respiratory droplets,

The massive asteroid that killed the dinosaurs 66 million years ago



Dinosaur and fossil aficionados are intimately familiar with the meteorite strike that drove Tyrannosaurus rex and all nonavian dinosaurs to extinction around 66 million years ago. But it is often overlooked that the impact also wiped out entire ecosystems. A new study shows how those casualties, in turn, led to another particularly profound evolutionary outcome: the emergence of the Amazon rain forest of South America. Yet the Amazon's bounty of tropical species and habitats now face their own existential threat because of unprecedented destruction from human activity,

A new species of meat-eating dinosaur has been discovered

"This is a particularly important discovery because it suggests that the diversity and abundance of abelisaurids were remarkable, not only across Patagonia, but also in more local areas during the dinosaurs' twilight period,"

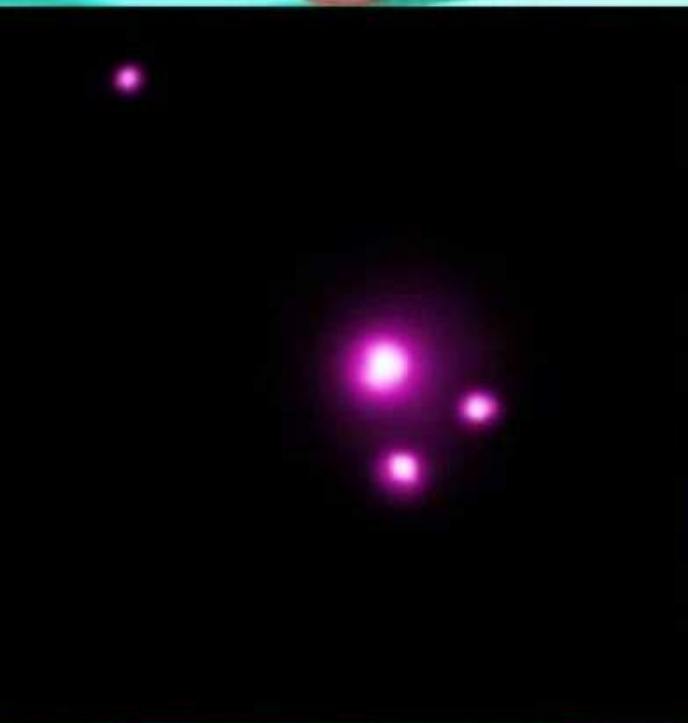


Abelisaurids were a family of dinosaurs averaging about 15 to 30 feet long that prowled mainly in Patagonia and other areas of the ancient southern subcontinent Gondwana, which is recognized today as Africa, India, Antarctica, Australia and South America.



X-ray detected coming out of Uranus for the first time

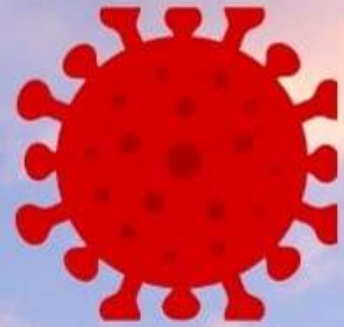
The seventh planet in the solar system, the Uranus, is a giant icy planet, with two sets of rings around its equator. It has four times the diameter of the Earth and rotates on its side, which makes it different from all other planets in the solar system. Researchers used the Chandra observations taken in Uranus in 2002 and then again in 2017 to confirm the X-ray radiation.



Researchers have previously observed that both the Jupiter and the Saturn radiate X-ray light that they receive from the Sun, similar to how the Earth's atmosphere scatters the Sun's light.



Nearly 652 million people have been vaccinated against covid 19 across 151 countries



The number of fully vaccinated people are nowhere near the number of doses administered since most of the countries are using Covid-19 vaccines that require a two-doses regimen.



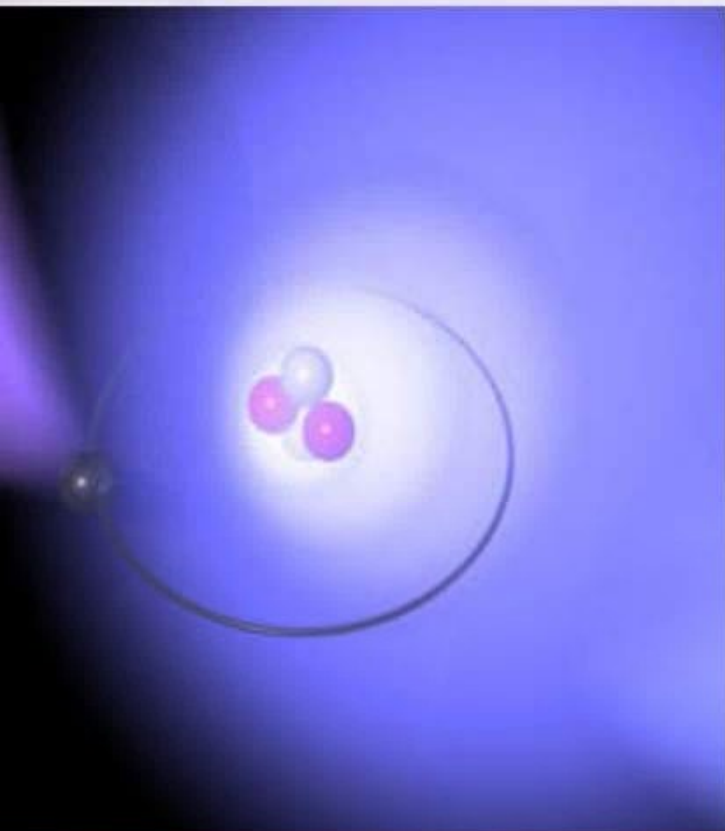
The dashboard further stated that as many as 129,494,179 people have received at least one dose of the vaccine while 82,471,151 people have been fully vaccinated.



Researchers directly manipulated antimatter with a Laser

Laser cooling and manipulation of various materials is a decades-old technique that has led to many groundbreaking results, but this is the first instance of its success with antimatter atoms.

But before diving into the mechanism and implications of the new experiment, it's worth taking a step back to understand why antimatter has remained such a giant question mark in models of the universe.



The Amazon rainforest now emits more greenhouse gases than it absorbs



A key distinction in appreciating the study's findings is that they do not just concern carbon dioxide, according to Mongabay. Though carbon dioxide often gets top billing in discussions around climate change, there are many other significant greenhouse gases, including methane, nitrous oxide, aerosols and sooty black carbon.



So, while the Amazon still absorbs and stores a prodigious amount of carbon, its net greenhouse gas emissions have tipped from negative to positive—not just because its capacity to absorb carbon dioxide has been damaged by human activity,

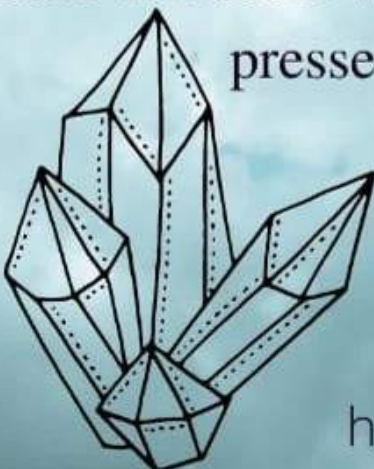


Human-made hexagonal diamonds are stiffer than the common cubic diamonds



Researchers have long wanted to create a material stronger than natural diamonds, which could have a variety of uses in industry. While many theorized that hexagonal diamonds would be stronger, the WSU study provides the first experimental evidence that they are.

Stiffness is the ability of a material to resist deformation under a force or pressure -- for instance, a rock is stiffer than rubber as rubber will bend when pressed.

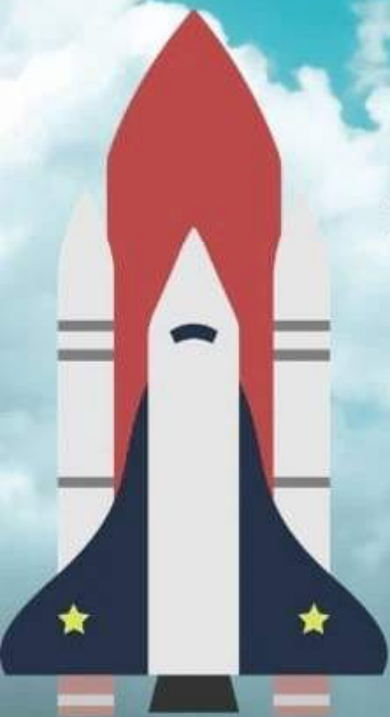


NASA's Mars helicopter successfully touches down on the Red planet



NASA is targeting no earlier than April 8 for the Ingenuity Mars Helicopter to make the first attempt at powered, controlled flight of an aircraft on another planet. Before the 4-pound (1.8-kilogram) rotorcraft can attempt its first flight, however, both it and its team must meet a series of daunting milestones.

Flying in a controlled manner on Mars is far more difficult than flying on Earth. The Red Planet has significant gravity (about one-third that of Earth's) but its atmosphere is just 1% as dense as Earth's at the surface



Science Galaxy

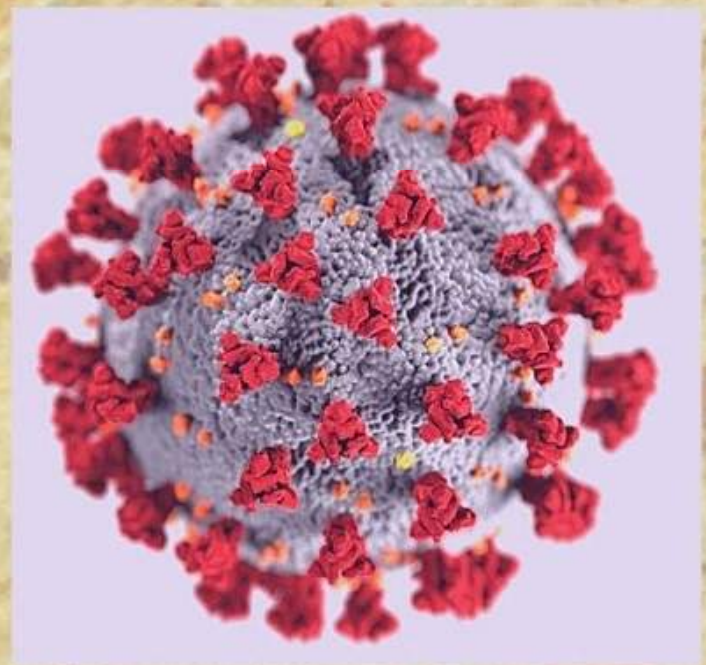
March 20-21

THIS WEEK IN
SCIENCE

05 - 11 April
20-21



**6 months after surviving
COVID-19, 1 in 3 patients
reported having neurological
and mental health disorders
new study show I**



Diagnoses for these conditions were on average 44% more common after COVID-19 than after flu, and the risk increased with the severity of illness, particularly for neurological disorders, the study authors from Oxford University said.

<https://www.businessinsider.in/science/health/news/over-a-third-of-covid-19-survivors-experience-a-neurological-or-mental-health-condition-in-the-6-months-after-infection-a-large-scale-study-finds/articleshow/81946621.cms>

Microbes discovered deep underground remain virtually unchanged since 175 million years ago



The team, led by the Bigelow Laboratory for Ocean Sciences, an independent, non-profit oceanography research institute, reports that the microbes have been frozen, evolutionary-speaking, for millions of years. Finding such a case could upturn our current understanding of how microbes evolve and why, and could potentially help guide biotechnology applications in the future (since you want these to not evolve/change over time).

The microbe species is known as *Candidatus Desulforudis audaxviator*, and was first discovered in 2008 by a group of researchers led by Tullis Onstott, a co-author on the new study.

They live in a gold mine in South Africa almost two miles beneath the surface, swimming merrily in the water-filled cavities inside the rock walls. They feed on chemical products formed by natural radioactive decay processes in minerals at the site, creating a completely independent ecosystem that doesn't even rely on sunlight to function.

Insulin pill shows promising results in animal models. It could eventually eliminate the need for self-injections for patients with diabetes



Individuals with type 1 diabetes must inject themselves with the required dose of insulin daily to manage their condition. In the future, injections may no longer be necessary; scientists are developing a viable way of delivering insulin in pill form.

The researchers created a complex pill coating, designed to shield the insulin from gastric acid and the enzymes of the small intestine and also be able to penetrate the intestine's protective barriers.

In this pill, insulin would be inserted in an ionic liquid that contains choline and geranic acid, itself encapsulated in enteric coating, which is resistant to gastric acid.

“This study shows remarkable results where insulin given by mouth in combination with an ionic liquid works about as well as a conventional injection. The implications of this work to medicine could be huge, if the findings can be translated into pills that safely and effectively administer insulin and other peptide drugs to humans,” he adds.

Ancient humans and Neanderthals interbred surprisingly often around 45,000 years ago, which is more recent than previously thought



One hundred thousand years ago, research suggests, a group of Homo sapiens — isolated from their own kind — came across a group of Neanderthals. The rest, as they say, is history — and the proof of their love affair has just been uncovered in ancient DNA.

It wasn't long ago that Neanderthals had a universal reputation for being hulking, idiotic cousins — brutal beasts who couldn't outsmart the modern humans we count as our ancestors

<https://www.washingtonpost.com/news/speaking-of-science/wp/2016/02/17/humans-and-neanderthals-may-have-interbred-50000-years-earlier-than-previously-thought/>

Archaeologists in Egypt discover a 3,000-year-old 'lost golden city', which is believed to be the largest ancient city found in the country



Largest ancient city



Pharaoh's Golden Parade



unearthed in Egypt

Culture-dating instead of carbon dating



Lost under layers of sand



Untouched for millenia



Human skeleton among digs

Archaeologists have unearthed the remains of an ancient city dating back 3,000 years, which they describe as the "largest" ever found in Egypt. The renowned Egyptologist Zahi Hawass announced the discovery of the "lost golden city" located near Luxor, home of the legendary Valley of the Kings.

nearly 768 million people have
been vaccinated against covid-19
across 154 countries the average
Global vaccination rate is 17.7
million short a day



Covid-19 vaccines have been administered worldwide in the three months since mass inoculation began in December, but there is still a huge disparity in the vaccination rates between countries. Israel continues to stand out in the vaccination race, with 58% of its population having received at least one dose of either the Moderna or Pfizer-BioNTech vaccines, and 46% having received both required doses.

pregnant women exposure to phthalates, which is found in plastic packaging, can lead to slower information processing in their infants



In February 2021, a new study was published by a research team led by neurotoxicologist Susan Schantz in the peer-reviewed International Journal of Environmental Research and Public Health, which found a correlation between phthalate exposure during pregnancy and altered cognitive processing in 159 seven-and-a-half-month-old infants.

<https://neurosciencenews.com/phthalate-exposure-information-processing-18186/>

Scientists reveal the first evidence that dogs can display glimpse of jealousy even if a supposed rival for affection and attention is out of sight



Past surveys have shown that more than 80% of dog owners report observing jealous behaviors from their dogs—vocalizations, agitated behavior, pulling on a leash—when they give attention to other dogs. New research published in the journal *Psychological Science* supports

these observations and finds that dogs also exhibit jealous behaviors when they merely imagine that their owner is interacting with a potential rival, in this case, a highly realistic artificial dog.

“Research has supported what many dog owners firmly believe—dogs exhibit jealous behavior when their human companion interacts with a potential rival,” said Amalia Bastos with the University of Auckland and lead author on the paper. “We wanted to study this behavior more fully to determine if dogs could, like humans, mentally represent a situation that evoked jealousy.”

Dogs appear to be one of the few species that might display jealous behaviors in ways similar to a human child showing jealousy when their mother gives affection to another child. In humans, jealousy is closely linked with self-awareness, which is one reason animal-cognition researchers are so interested in studying jealousy and other secondary emotions in animals. "these result support claims that dogs display jealous behavior".

...<https://www.psychologicalscience.org>

Physicists say they have found possible signs of a previously undiscovered fundamental force of nature called the Muon

Physicists now say they have found possible signs of a fifth fundamental force in nature. The four fundamental forces govern how all objects and particles in the universe interact with each other. For example, gravity makes objects fall to the floor and heavy objects behave as if they are glued to the floor.

Fifth force of nature can explain the acceleration of the expansion of the universe.

Have you heard of muons? They are unstable subatomic particles, similar to the electrons, but 207 times heavier. Scientists from Fermilab, a particle study laboratory in Illinois, USA, uses these particles to analyze the fundamental forces of nature.

From sticking a magnet to a refrigerator door to throwing a ball into a basketball hoop, the forces of physics work at all times in our lives. All the forces we experience every day can be reduced to just four categories: gravity, electromagnetism, the strong nuclear



force the weak nuclear force..

Physicists now say they have found possible signs of a fifth fundamental force in nature.

The four fundamental forces govern how all objects and particles in the universe interact with each other. For example, gravity makes objects fall to the floor and heavy objects behave as if they are glued to the floor.

NASA's Hubble Space Telescope detects a pair of quasars closer together than any others previously observed



NASA's Hubble Space Telescope has captured not one but two pairs of distant quasars that existed some 10 billion years ago, a new study reports.

According to the team leading the research, the discovery was like finding a needle in a haystack, as the chance of locating a double quasar compared to a single quasar is just one in 1,000.

Imagery captured by the long-serving space telescope shows that the quasars within each pair are only about 10,000 light-years apart. For comparison, our sun is 26,000 light-years away from the supermassive black hole at the heart of the Milky Way. The researchers, led by Nadia Zakamska of Johns Hopkins University in Baltimore, Maryland, believe that the quasars are knitted so closely to each other because each pair lies at the center of two galaxies in the midst of a smashup.



These images captured by the Hubble Space Telescope reveal two pairs of quasars.

Although Hubble is the only telescope with a high enough resolution to distinguish these two close quasar pairs, its sharp eye wasn't quite good enough to locate them on its own.

<https://www.space.com > rare-double-quasars-hubble-te>

Science Galaxy

March 20-21

**THIS WEEK IN
SCIENCE**

**12 - 18 April
20-21**



Covid: Rare 'breakthrough infections' reported among fully vaccinated people

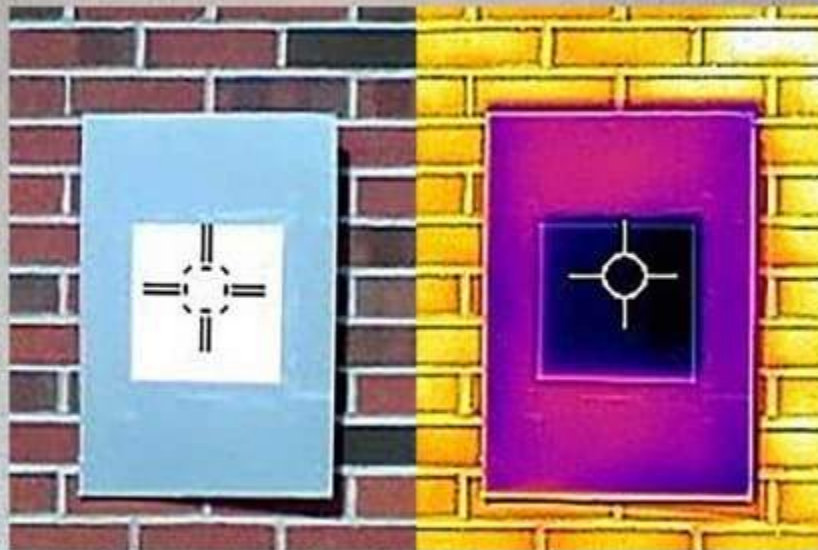


The U.S. Centers for Disease Control and Prevention has identified a small cohort of approximately 5,800 cases of Covid-19 infection among more than 66 million Americans who have completed a full course of vaccination. These so-called breakthrough cases, which are defined as positive Covid-19 test results received at least two weeks after patients receive their final vaccine dose, represent 0.03% of the fully vaccinated population.

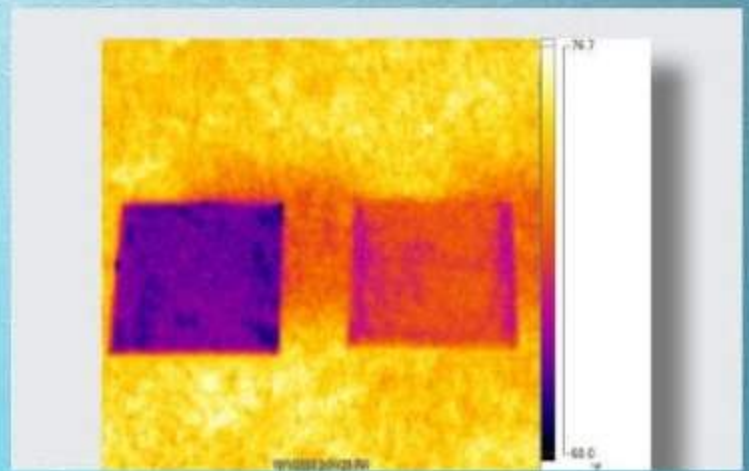
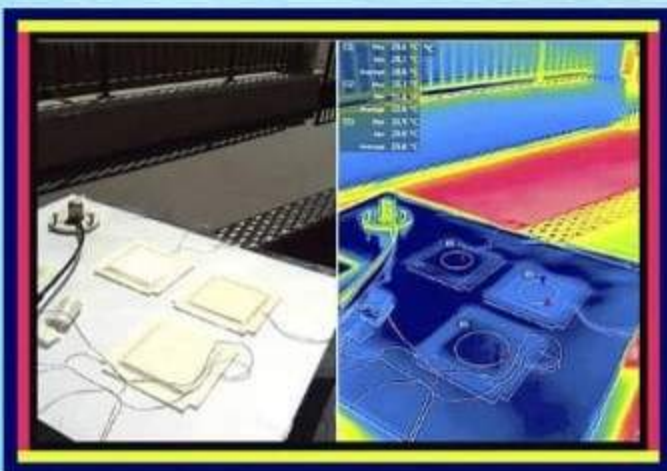


<https://www.wsj.com/amp/articles/cdc>.

Whitest paint ever reflects 98 per cent of light and could cool home

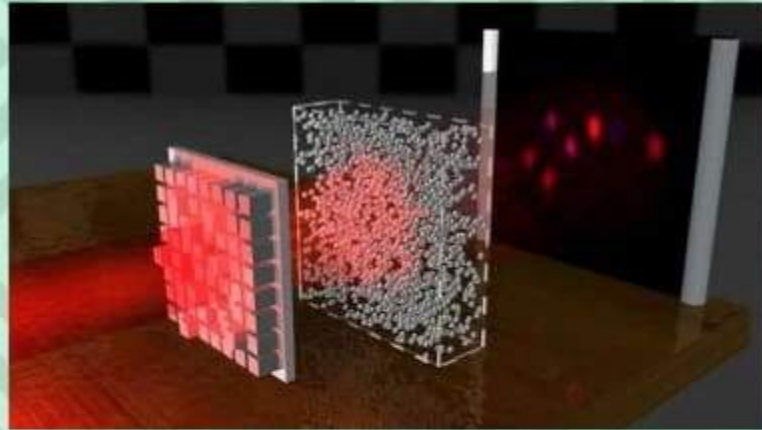


Xiulin Ruan at Purdue University in Indiana and his colleagues previously developed an ultra-reflective paint using calcium carbonate particles that reflected 95.5 per cent of sunlight. They have now improved on that by using barium sulphate particles in a paint that reflects 98.1 per cent of sunlight.



<https://www.newscientist.com/article/2274809-whitest-paint-ever-reflects-98-per-cent-of-light-and-could-cool-homes/>

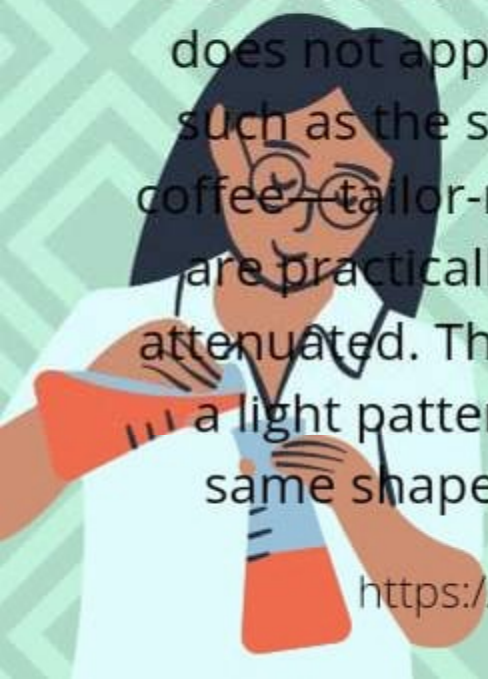
Researchers create light waves that can penetrate even opaque materials



This idea of "scattering-invariant modes of light" can also be used to specifically examine the interior of objects. The results have now been published in the journal *Nature Photonics*.

Why is sugar not transparent? Because light that penetrates a piece of sugar is scattered, altered and deflected in a highly complicated way. However, as a research team from TU Wien (Vienna) and Utrecht University (Netherlands) has now been able to show, there is a class of very special light waves for which this does not apply: for any specific disordered medium—such as the sugar cube you may just have put in your coffee—tailor-made light beams can be constructed that are practically not changed by this medium, but only attenuated. The light beam penetrates the medium, and a light pattern arrives on the other side that has the same shape as if the medium were not there at all.

<https://phys.org/news/2021-04-penetrate-opaque-materials.html>



Archaeologist find 3,500 year-old honeypot from Africa(Nigeria)



Researchers have discovered a 3,500 year-old honeypot from Africa, presenting the oldest direct evidence for honey collection in the continent. The Nok culture in central Nigeria dates between 1,500 BCE and the beginning of the Common Era and is known particularly for its elaborate terracotta sculptures -- representatives of the oldest figurative art in Africa.

"That honey was part of their daily menu was completely unexpected, and unique in the early history of Africa until now," said Peter Breunig, Professor from Goethe.



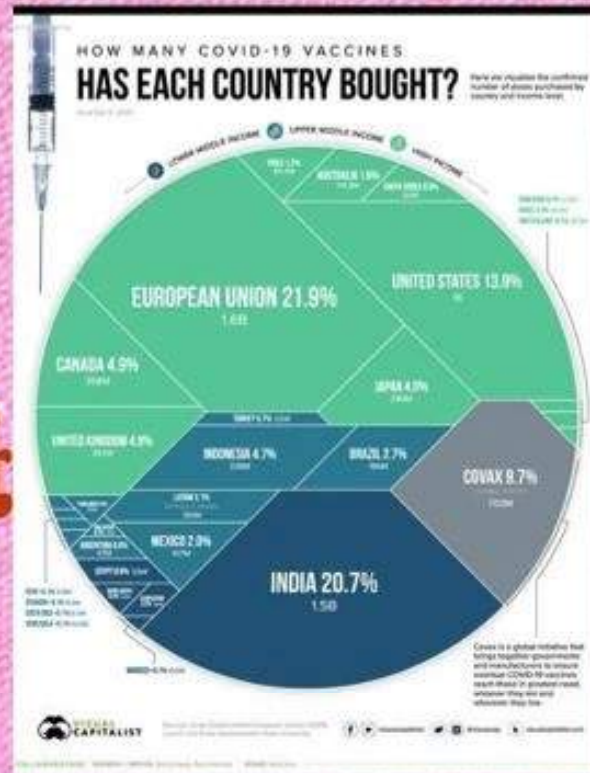
<https://m.tribuneindia.com/news/schools/scientists-find-3-500-year-old-honeypot>

NASA selects SpaceX to put astronauts back on the moon



The space agency announced today that it has awarded SpaceX a \$2.9 billion contract to develop a version of the Starship rocket that can land people on the moon. In a key milestone for NASA's plan to return humans to the moon, the space agency today announced that SpaceX will build the vehicle that will land astronauts on the lunar surface. The current plan, known as Artemis, calls for astronauts to launch on NASA's Space Launch System (SLS) rocket, fly to lunar orbit on the space agency's Orion space capsule, and then transfer to SpaceX's Starship rocket to make the final descent to the surface.

More Than 1.1 Billion Shots Given: Covid-19 Tracker



The biggest vaccination campaign in history is underway. More than 1.1 billion doses have been administered across 174 countries, according to data collected by Bloomberg. The latest rate was roughly 19.7 million doses a day.

In the U.S., 237 million doses have been given so far. In the last week, an average of 2.63 million doses per day were administered.

World Map of Vaccinations

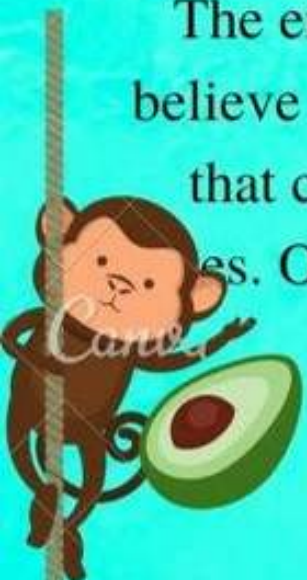
More than 1.1 billion doses have been administered.

Scientists Create Early Embryos That Are Part Human, Part Monkey



This is a story straight out of a sci-fi film, but it's true! Researchers say they have grown the first ever embryo that's part human, part monkey. The embryo is called a chimera, because it is formed by more than one species. Researchers say they injected human stem cells into monkey embryos and studied their development.

The embryos survived about 19 days. Some researchers believe this kind of work can lead to advances in medicine that could help with treating diseases and other health issues. Others caution about creating human-animal hybrids.



<https://local12.com/amp/news/offbeat/scientists-create-early-embryos-that-are-part-human-part-monkey-chimera>

Glacier in Alaska Surging for the First Time in 64 years. And moving 100 times faster.



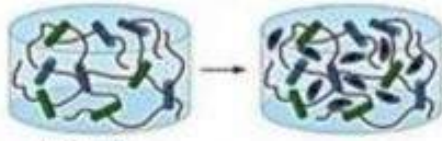
The Muldrow Glacier, one of the five large glaciers that flows off the slopes of the Denali mountain peak in Alaska, is now moving 10 to 100-times faster than it was several months ago. A pilot first noticed the speed shift in early March, observing from the air a (relatively) sudden cracking of ice along the length of the glacier. And while officials have been expecting the sudden speed shift, it's still a momentous event. Earther reported on Muldrow's newfound celerity, an event which marks a natural shift in the glacier's pace of movement.



New hydrogel can stop cartilage breakdown and speed up healing.



In vitro hydrogel analysis

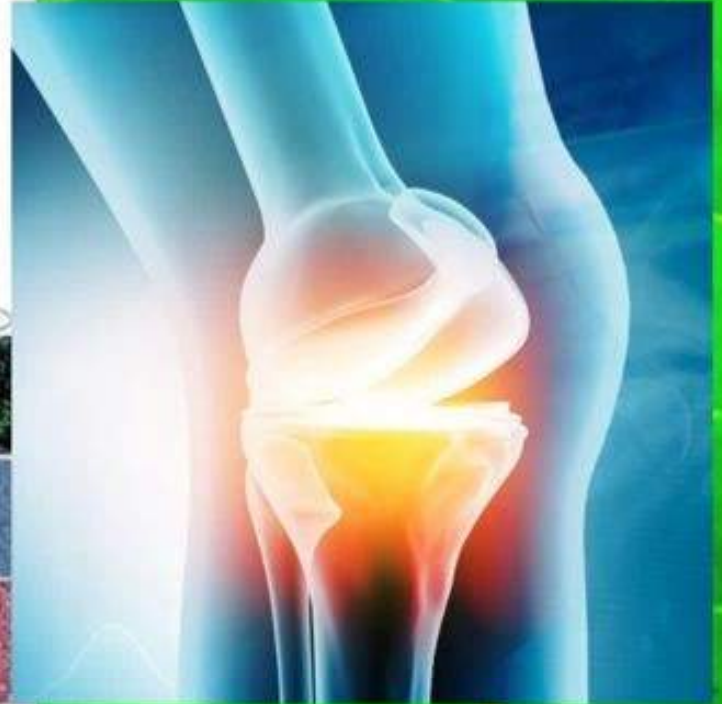


■ Polymer
■ Crosslinker / Porogen



In vivo hydrogel analysis

- ✓ Adequate ultrastructural and mechanical properties
- ✓ Similar hyaline cartilage ECM
- ✓ Stable cartilage-like tissue



The material may look like a distant cousin of Jell-O—which it is—but it's incredibly strong. It's 60% water, but a single quarter-sized disc can bear the weight of a 100-pound kettlebell without tearing or losing its shape. The thin, slippery layer of cartilage between the bones in the knee is magical stuff: strong enough to withstand a person's weight, but soft and supple enough to cushion the joint against impact, over decades of repeat use.

That combination of soft-yet-strong has been hard to reproduce in the lab.



Astronomers Detect a New Super-Earth Orbiting a Red Dwarf Star



In recent years there has been an exhaustive study of red dwarf stars to find exoplanets in orbit around them. These stars have effective surface temperatures between 2400 and 3700 K (over 2000 degrees cooler than the Sun), and masses between 0.08 and 0.45 solar masses. The planet orbits its star with a period of 2.4 days and its mass is around 3 times the mass of the Earth. Because the star is so close to the Sun, and the planet so close to the star, this new super-Earth could be the object of future researches with very large diameter telescopes towards the end of this decade.



<https://scitechdaily.com/astronomers-detect-a-new-super-earth/>

Science Galaxy

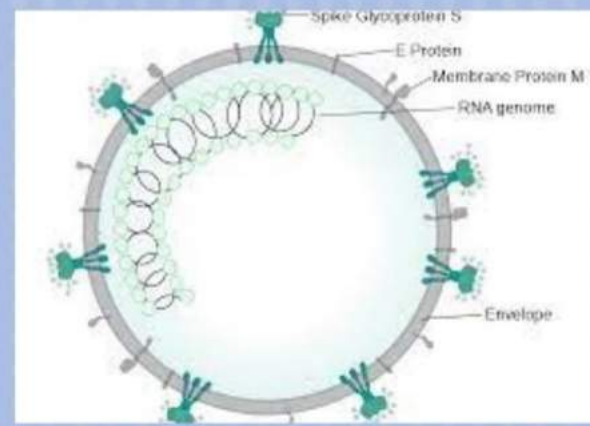
March 20-21

**THIS WEEK IN
SCIENCE**

**19 - 25 April
20-21**



Scientists have successfully identified a set of human genes that fight SARS-CoV-2



Scientists have identified a set of human genes that fight SARS-CoV-2 infection, the virus that causes COVID-19. Knowing which genes help control viral infection can greatly assist researchers' understanding of factors that affect disease severity and also suggest possible therapeutic options. The genes in question are related to interferons, the body's frontline virus fighters.

"We wanted to gain a better understanding of the cellular response to SARS-CoV-2, including what drives a strong or weak response to infection," says Sumit K. Chanda, Ph.D., professor and director of the Immunity and Pathogenesis Program at Sanford Burnham Prebys and lead author of the study. "We've gained new insights into how the virus exploits the human cells it invades, but we are still searching for its Achilles' heel so that we can develop optimal antivirals."

Soon after the start of the pandemic, clinicians found that a weak interferon response to SARS-CoV-2 infection resulted in some of the more severe cases of COVID-19. This knowledge led Chanda and his collaborators to search for the human genes that are triggered by interferons, known as interferon-stimulated genes (ISGs), which act to limit SARS-CoV-2 infection.

Mushroom consumption lowers the risk of cancer by 45%



Researchers from Penn State analysed data from more than 19,500 cancer patients to explore the relationship between mushroom consumption and cancer risk.

According to the findings of the study, people who ate 18 grams of mushrooms daily had a 45% lower risk of cancer compared to those who did not eat mushrooms.

Mushroom variety

Mushrooms are rich in vitamins, nutrients and **antioxidants** and even though shiitake, oyster, maitake and king oyster mushrooms have higher amounts of the amino acid ergothioneine than white button, cremini and portabello mushrooms, any variety can lower the risk of cancer.

“Mushrooms are the highest dietary source of ergothioneine, which is a unique and potent antioxidant and cellular protector,” said Djibril M. Ba, a graduate student in epidemiology at Penn State College of Medicine. “Replenishing antioxidants in the body may help protect against oxidative stress and lower the risk of cancer.”

<https://www.openaccessgovernment.org/>

Childhood spanking is linked to adverse physical, psychological, and behavioral outcomes in adolescence



Spanking or slapping children as a form of punishment appears to pave the way for harmful outcomes that are discernable in adolescence. A new study, published in the *Canadian Journal of Psychiatry*, revealed that teens who had been spanked or slapped as children had increased odds of presenting with mental health issues, physical health problems, and defiant behavior.

While the American Academy of Pediatrics has condemned all uses of physical punishment against children, many parents still consider spanking an appropriate form of discipline. Spanking tends to fall under the radar in that it is often characterized as a “milder” form of physical punishment that is less harmful than others. Yet, the literature consistently shows that spanking leads to harmful outcomes among children.

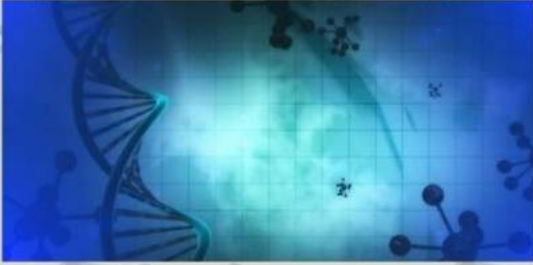
“There is a large body of evidence that indicates that spanking is harmful. There are not studies showing benefits for children.

Despite this, some parents continue to use spanking to discipline children. More work is needed in an effort to prevent spanking,”

said study author Tracie O. Afifi, a professor and the Canada Research Chair in Childhood Adversity and Resilience at the University of Manitoba.

<https://www.psypost.org/>

Gene That Could Help Prevent or Delay Onset of Alzheimer's Disease Identified



Findings of a study by the Translational Genomics Research Institute (TGen), an affiliate of City of Hope, suggest that increasing expression of a gene known as ABCC1 could not only reduce the deposition of a hard plaque in the brain that leads to Alzheimer's disease, but might also prevent or delay this memory-robbing disease from developing.

ABCC1, also known as MRP1, has previously been shown in laboratory models to remove a plaque-forming protein known as amyloid beta (Abeta) from specialized endothelial cells that surround and protect the brain and cerebral spinal cord. Building on previous studies, TGen conducted a series of pre-clinical genomic laboratory experiments. Results suggest that ABCC1 not only could export Abeta out of the brain, but that increasing the expression of ABCC1 could reduce Abeta production, thus preventing, or delaying, the onset of Alzheimer's.

“Much work remains toward developing a drug that slows the development of or prevents Alzheimer's disease, but our findings suggest that targeting ABCC1 offers a promising path that could eventually lead to effective therapeutics,” said Wayne Jepsen, a Postdoctoral Fellow in TGen's Neurogenomics Division, and the study's lead author. <https://neurosciencenews.com/>

NASA's Ingenuity Mars Helicopter Flies Faster, Farther on Third Flight



NASA's Ingenuity Mars Helicopter continues to set records, flying faster and farther on Sunday, April 25, 2021 than in any tests it went through on Earth. The helicopter took off at 4:31 a.m. EDT (1:31 a.m. PDT), or 12:33 p.m. local Mars time, rising 16 feet (5 meters) – the same altitude as its second flight. Then it zipped downrange 164 feet (50 meters), just over half the length of a football field, reaching a top speed of 6.6 feet per second (2 meters per second).

After data came back from Mars starting at 10:16 a.m. EDT (7:16 a.m. PDT), Ingenuity's team at NASA's Jet Propulsion Laboratory in Southern California was ecstatic to see the helicopter soaring out of view. They're already digging through a trove of information gathered during this third flight that will inform not just additional Ingenuity flights but possible Mars rotorcraft in the future.

“Today's flight was what we planned for, and yet it was nothing short of amazing,” said Dave Lavery, the project's program executive for Ingenuity Mars Helicopter at NASA Headquarters in Washington. “With this flight, we are demonstrating critical capabilities that will enable the addition of an aerial dimension to future Mars missions.”

172 countries and multiple candidate vaccines engaged in COVID-19 vaccine Global Access Facility



172 economies are now engaged in discussions to potentially participate in COVAX, a global initiative aimed at working with vaccine manufacturers to provide countries worldwide equitable access to safe and effective vaccines, once they are licensed and approved. COVAX currently has the world's largest and most diverse COVID-19 vaccine portfolio - including nine candidate vaccines, with a further nine under evaluation and conversations underway with other major producers.

COVAX, the vaccines pillar of the Access to COVID-19 Tools (ACT) Accelerator, is co-led by the Coalition for Epidemic Preparedness Innovations (CEPI), Gavi, the Vaccine Alliance, and the World Health Organization (WHO) – working in partnership with developed and developing country vaccine manufacturers. It is the only global initiative that is working with governments and manufacturers to ensure COVID-19 vaccines are available worldwide to both higher-income and lower-income countries.

Malaria vaccine hailed as potential breakthrough



A malaria vaccine has proved to be 77% effective in early trials and could be a major breakthrough against the disease, says the University of Oxford team behind it.

Malaria kills more than 400,000 people a year, mostly children in sub-Saharan Africa.

But despite many vaccines being trialled over the years, this is the first to meet the required target.

The researchers say this vaccine could have a major public health impact.

When trialled in 450 children in Burkina Faso, the vaccine was found to be safe, and showed "high-level efficacy" over 12 months of follow-up.

Larger trials in nearly 5,000 children between the ages of five months and three years will now be carried out across four African countries to confirm the findings.

Malaria is a life-threatening disease caused by parasites that are transmitted to people through mosquito bites. Although preventable and curable, the World Health Organization estimates there were 229 million cases worldwide in 2019 and 409,000 deaths

American honey may contain traces of nuclear fallout



Some American-made honey contains traces of a radioactive isotope — fallout from the nuclear testing of the 1950s and 1960s, a new study says.

The study, published last month in *Nature Communications*, says there's a good chance the isotope, called cesium-137, is present in your honey, but it's in such small amounts, it doesn't pose a health risk to humans.

"I eat more honey now than I did when I started this project," said Jim Kaste, the lead author on the study, in a press release. "I feed my kids honey. I'm not trying to tell people they shouldn't eat honey."

What he is trying to do is shed light on the ongoing impacts of atom bomb testing during midcentury. Kaste also says his research may "have bearing on the recent collapse in the population of bees and other pollinating insects."

Most of the radiation produced by nuclear weapon detonation dissipates within a few days, but one of the most abundant fission products, cesium-137, has a radioactive half-life of 30.2 years, the study says.

Weekly injection could treat type 2 diabetes, new enzyme discovery suggests



A newly discovered protein produced by the liver, and which helps to control blood sugar levels, could potentially revolutionise treatment for type 2 diabetes.

Our research, published today in *Science Translational Medicine*, found that injecting this protein, called SMOC1, into diabetic mice helped them control their blood glucose much more easily. We have also engineered a long-lasting form of SMOC1 which, if it works the same way in humans as in mice, would only need to be injected once a week, rather than given daily as is the case for many current diabetes medications.

Our results in mice suggest SMOC1 is more effective than metformin, the current frontline drug for type 2 diabetes, in improving blood glucose control and insulin sensitivity. It's also without the risk of dangerously low blood sugar associated with current drugs.

SpaceX Crew-2 Astronauts Headed to International Space Station



NASA's SpaceX Crew-2 astronauts are in orbit following their early morning launch bound for the International Space Station for the second commercial crew rotation mission aboard the microgravity laboratory. The international crew of astronauts lifted off at 5:49 a.m. EDT Friday from Launch Complex 39A at NASA's Kennedy Space Center in Florida.

The SpaceX Falcon 9 rocket propelled the Crew Dragon spacecraft with NASA astronauts Shane Kimbrough and Megan McArthur, along with JAXA (Japan Aerospace Exploration Agency) astronaut Akihiko Hoshide and ESA (European Space Agency) astronaut Thomas Pesquet, into orbit to begin a six-month science mission on the space station.

During Crew Dragon's flight, SpaceX will command the spacecraft from its mission control center in Hawthorne, California, and NASA teams will monitor space station operations throughout the flight from Mission Control Center at the agency's Johnson Space Center in Houston.

*We are waiting for your
motivational
appreciations and kind
suggestions.*



https://docs.google.com/forms/d/e/1FAIpQLSe6aSx_myuYVa3l41enHqhVaN3QhjgEXOjmvQJvIEwU4MSUPQ/viewform

Publisher:

**SAHAKAR MAHARSHI BHAUSAHEB SANTUJI
THORAT COLLEGE OF ARTS, SCIENCE AND
COMMERCE, SANGAMNER 422605**

<http://www.smbstcollege.com/>