

TECHNOLOGY ROUNDUP

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**PRENTAR FUEL
CATALYSTS and MAX-R
100 ACTIVE
REFRIGERANT AGENT**



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- International Conference on Marine Science and Aquaculture (ICMSA)
- International Congress on Cell Science and Molecular Biology (IC-CSMB)
- E-commerce Berlin Expo,
- Women in IT Awards UK
- Wearable Technology Show
- Data Center World

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NUST licenses a GIS-based land management system to GIS Plus Total Solutions Pvt Ltd

NUST Innovation & Commercialisation (I&C) Dte marks another milestone on October 1, 2021, as a GIS-based land management system has been licensed to a NUST spinoff, GIS Plus Total Solutions Pvt Ltd. The proposed platform offers an automated society management system based on Geographical Information



Systems (GIS), which promises increased efficiency and peace of mind for both managers and the customers. This technology is key in the development of new housing societies and can also be integrated with existing ones to offer residents a better experience with this advanced property management system.

<https://nust.edu.pk/news/nust-licenses-a-gis-based-land-management-system-to-gis-plus-total-solutions-pvt-ltd/>

NUST Innovation & Commercialization (I&C) Dte signed a licensing agreement with Silverback Pvt. Ltd.

Continuing on its trajectory of impactful research and innovation, NUST Innovation & Commercialization (I&C) Dte signed a licensing agreement with Silverback Pvt. Ltd. Pro-rector Research Innovation & Commercialisation NUST, Dr Rizwan Riaz, signed the agreement with Silverback Pvt. Ltd. for two IPRs of a state-of-the-art virtual IoT learning and development platform.

Users may access physical IoT hardware while remotely programming, and debugging their project College



of Electrical and Mechanical Engineering (CEME).

Universities will be able to use this solution's virtual access features to conduct IoT lab courses and to test their IoT-based research remotely at a low cost.

<https://nust.edu.pk/news/nust-innovation-commercialization-ic-dte-signed-a-licensing-agreement-with-silverback-pvt-ltd/>

New research finds that children who eat more fruit and veg have better mental health

The study is the first to investigate the association between fruit and vegetable intakes, breakfast and lunch choices, and mental wellbeing in UK school children. The research team studied data from almost 9,000 children in 50 schools. They found that the types of breakfast and lunch eaten by both primary and secondary school pupils were significantly associated with wellbeing.



Credit: © ricka_kinamoto / stock.adobe.com

It shows how eating more fruit and vegetables is linked with better wellbeing among secondary school pupils in particular. And children who consumed five or more portions of fruit and vegetables a day had the highest scores for mental wellbeing.

The study was led by UEA Health and Social Care Partners in collaboration with Norfolk County Council.

The research team say that public health strategies and school policies should be developed to ensure that good quality nutrition is available to all children before and during school to optimise mental wellbeing and empower children to fulfil their full potential.

Lead researcher Prof Ailsa Welch, from UEA's Norwich Medical School, said: "We know that poor mental wellbeing is a major issue for young people and is likely to have long-term negative consequences." The pressures of social media and modern school culture have been touted as potential reasons for a rising prevalence of low mental wellbeing in children and young people. "Another interesting thing that we found was that nutrition had as much or more of an impact on wellbeing as factors such as witnessing regular arguing or violence at home. Prof Welch said: "As a potentially modifiable factor at an individual and societal level, nutrition represents an important public health target for strategies to address childhood mental wellbeing." Public health strategies and school policies should be developed to ensure that good quality nutrition is available to all children both before and during school in order to optimise mental wellbeing and empower children to fulfil their full potential

.Source: <https://www.sciencedaily.com/releases/2021/09/210928075004.htm>

ENGINEERS GROW PANCREATIC 'ORGANOIDS' THAT MIMIC THE REAL THING

MIT engineers, in collaboration with scientists at Cancer Research UK Manchester Institute, have developed a new way to grow tiny replicas of the pancreas, using either healthy or cancerous pancreatic cells. Their new models could help researchers develop and test potential drugs for pancreatic cancer, which is currently one of the most difficult types of cancer to treat.



Illustration of pancreas in human body (stock image).

Credit: © magicmine / stock.adobe.com

Using a specialized gel that mimics the extracellular environment surrounding the pancreas, the researchers were able to grow pancreatic "organoids," allowing them to study the important interactions between pancreatic tumors and their environment. Unlike some of the gels now used to grow tissue, the new MIT gel is completely synthetic, easy to assemble and can be produced with a consistent composition every time.

"The issue of reproducibility is a major one," says Linda Griffith, the School of Engineering Professor of Teaching Innovation and a professor of biological engineering and mechanical engineering. "The research community has been looking for ways to do more methodical cultures of these kinds of organoids, and especially to control the microenvironment."

The researchers have also shown that their new gel can be used to grow other types of tissue, including intestinal and endometrial tissue.

Traditionally, labs have used commercially available tissue-derived gel to grow organoids in a lab dish. However, as the most widely used commercial gel is a complex mixture of proteins, proteoglycans, and growth factors derived from a tumor grown in mice, it is variable from lot to lot and has undesirable components present, Griffith says. It also doesn't always allow for growth of multiple types of cells. About 10 years ago, Griffith's lab started to work on designing a synthetic gel that could be used to grow epithelial cells, which form the sheets that line most organs, along with other supportive cells.

The newly developed gel is based on polyethylene glycol (PEG), a polymer that is often used for medical applications because it doesn't interact with living cells. By studying the biochemical and biophysical properties of the extracellular matrix, which surrounds organs in the body, the researchers were able to identify features they could incorporate into the PEG gel to help cells grow in it. One key feature is the presence of molecules called peptide ligands, which interact with cell surface proteins called integrins. The researchers also showed that they can use their gel to grow organoids from pancreatic cancer cells from patients.

<https://www.sciencedaily.com/releases/2021/09/210913135619.htm>

RESEARCH FINALLY REVEALS ANCIENT UNIVERSAL EQUATION FOR THE SHAPE OF AN EGG

Researchers from the University of Kent, the Research Institute for Environment Treatment and Vita-Market Ltd have discovered a universal mathematical formula that can describe any bird's egg existing in nature, a feat which has been unsuccessful until now.



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Egg-shape has long attracted the attention of mathematicians, engineers, and biologists from an analytical point of view. The shape has been highly regarded for its evolution as large enough to incubate an embryo, small enough to exit the body in the most efficient way, not roll away once laid, is structurally sound enough to bear weight and be the beginning of life for 10,500 species that have survived since the dinosaurs. The egg has been called the “perfect shape.”

Analysis of all egg shapes used four geometric figures: sphere, ellipsoid, ovoid, and pyriform (conical), with a mathematical formula for the pyriform yet to be derived.

To rectify this, researchers introduced an additional function into the ovoid formula, developing a mathematical model to fit a completely novel geometric shape characterized as the last stage in the evolution of the sphere-ellipsoid, which it is applicable to any egg geometry.

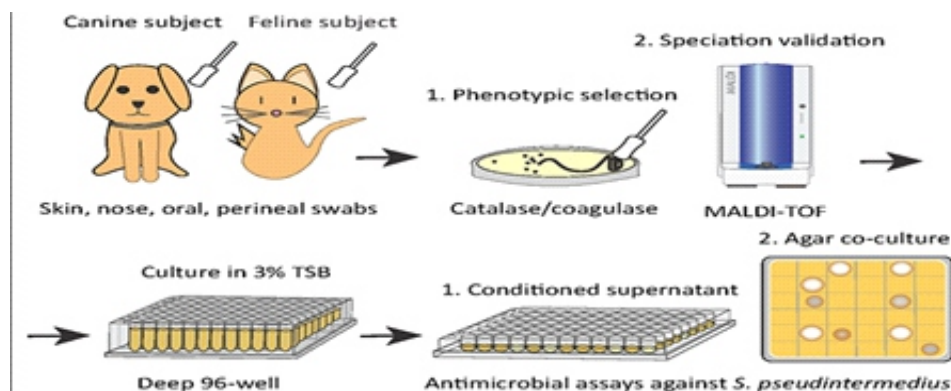
This new universal mathematical formula for egg shape is based on four parameters: egg length, maximum breadth, shift of the vertical axis, and the diameter at one quarter of the egg length.

This long sought-for universal formula is a significant step in understanding not only the egg shape itself, but also how and why it evolved, thus making widespread biological and technological applications possible.

<https://www.labmanager.com/news/research-finally-reveals-ancient-universal-equation-for-the-shape-of-an-egg-26618>

CAT BACTERIA TREATS MOUSE SKIN INFECTION, MAY HELP YOU AND YOUR PETS AS WELL

searchers at University of California San Diego School of Medicine used bacteria found on healthy cats to successfully treat a skin infection on mice. These bacteria may serve as the basis for new therapeutics against severe skin infections in humans, dogs and cats.



To identify candidates for a new bacteriotherapy against skin infection, researchers first screened various bacteria from dogs and cats and co-cultured them with *S. pseudintermedius* in liquid and agar antimicrobial assays.

The study was led by Richard L. Gallo, MD, PhD, Distinguished Professor and chair of the Department of Dermatology at UC San Diego School of Medicine, whose team specializes in using bacteria and their products to treat illnesses — an approach known as “bacteriotherapy.”

Skin is colonized by hundreds of bacterial species that play important roles in skin health, immunity and fighting infection. All species need to maintain a diverse balance of healthy skin bacteria to fight potential pathogens. “Our health absolutely depends on these 'good' bacteria,” said Gallo. “They rely on our healthy skin to live, and in return some of them protect us from 'bad' bacteria. But if we get sick, 'bad' bacteria can take advantage of our weakened defenses and cause infection.”

This is the case with methicillin-resistant *Staphylococcus pseudintermedius* (MRSP), a bacterium commonly found on domesticated animals that becomes infectious when the animals are sick or injured.

To address this, researchers first screened a library of bacteria that normally live on dogs and cats and grew them in the presence of MRSP. From this, they identified a strain of cat bacteria called *Staphylococcus felis* (*S. felis*) that was especially good at inhibiting MRSP growth. They found that this special strain of *S. felis* naturally produces multiple antibiotics that kill MRSP by disrupting its cell wall and increasing the production of toxic free radicals. “The potency of this species is extreme,” said Gallo. “It is strongly capable of killing pathogens, in part because it attacks them from many sides — a strategy known as 'polypharmacy.' This makes it particularly attractive as a therapeutic.”

<https://ucsdnews.ucsd.edu/pressrelease/cat-bacteria-treats-mouse-skin-infection-may-help-you-and-your-pets>

CHANG'E-5 SAMPLES REVEAL KEY AGE OF MOON ROCKS

A lunar probe launched by the Chinese space agency recently brought back the first fresh samples of rock and debris from the moon in more than 40 years. Now an international team of scientists -- including an expert from Washington University in St. Louis -- has determined the age of these moon rocks at close to 1.97 billion years old.



Moon (stock image). Credit: © Simon van Hemert / stock.adobe.com

It is the perfect sample to close a 2-billion-year gap," said Brad Jolliff, the Scott Rudolph Professor of Earth and Planetary Sciences in Arts & Sciences and director of the university's McDonnell Center for the Space Sciences. Jolliff is a U.S.-based co-author of an analysis of the new moon rocks led by the Chinese Academy of Geological Sciences, published Oct. 7 in the journal *Science*.

The age determination is among the first scientific results reported from the successful Chang'e-5 mission, which was designed to collect and return to Earth rocks from some of the youngest volcanic surfaces on the moon.

"Of course, 'young' is relative," Jolliff said. "All of the volcanic rocks collected by Apollo were older than 3 billion years. And all of the young impact craters whose ages have been determined from the analysis of samples are younger than 1 billion years. So the Chang'e-5 samples fill a critical gap."

The gap that Jolliff cites is important not only for studying the moon, but also for studying other rocky planets in the solar system.

<https://www.sciencedaily.com/releases/2021/10/211007145754.htm>

Neuroprosthesis' restores words to man with paralysis

Researchers at UC San Francisco have successfully developed a “speech neuroprosthesis” that has enabled a man with severe paralysis to communicate in sentences, translating signals from his brain to the vocal tract directly into words that appear as text on a screen



Researchers have developed new technology to help people with paralysis.

Image: Noah Berger

The achievement, which was developed in collaboration with the first participant of a clinical research trial, builds on more than a decade of effort by UCSF neurosurgeon Edward Chang, MD, to develop a technology that allows people with paralysis to communicate even if they are unable to speak on their own.

“To our knowledge, this is the first successful demonstration of direct decoding of full words from the brain activity of someone who is paralyzed and cannot speak,” said Chang, the Joan and Sanford Weill Chair of Neurological Surgery at UCSF, Jeanne Robertson Distinguished Professor, and senior author on the study. “It shows strong promise to restore communication by tapping into the brain's natural speech machinery.” Each year, thousands of people lose the ability to speak due to stroke, accident, or disease. With further development, the approach described in this study could one day enable these people to fully communicate.

The achievement, which was developed in collaboration with the first participant of a clinical research trial, builds on more than a decade of effort by UCSF neurosurgeon Edward Chang, MD, to develop a technology that allows people with paralysis to communicate even if they are unable to speak on their own.

<https://www.weforum.org/agenda/2021/07/neuroprosthesis-restores-words-to-man-with-paralysis>

Forthcoming Tech Events

Pakistan

International Conference on Science, Engineering & Technology (ICSET)

28-29th January, 2022

Islamabad

<https://10times.com/icset-pakistan>

International Conference on Medical & Health Science (ICMHS)

28-29th January, 2022, Islamabad

<https://10times.com/icmhs-pakistan>

International Conference on Marine Science and Aquaculture (ICMSA)

1st-2nd December, 2021

Karachi

<http://universal-conference.com/Conference/23473/ICMSA/>

International Congress on Cell Science and Molecular Biology (IC-CSMB)

1st-2nd December, 2021

Peshawar

<http://worldresearchsociety.com/Conference/30904/IC-CSMB/>

International

E-commerce Berlin Expo,

69th February, 2022

Luckenwalder Str. 4-6, 10963 Berlin, Germany

https://ecommerceberlin.com/?utm_source=information_age_calendar&utm_medium=calendar&utm_campaign=information_age_calendar&utm_id=information_age_calendar

Women in IT Awards UK

28th February, 2022

86-90 Park Lane, London, W1K 7TN, United Kingdom

https://www.bonhillevents.com/EN/WITAwardsUK2022?utm_source=IA&utm_medium=webpage&utm_campaign=WITAwardsUK2022

Wearable Technology Show

17-18th March, 2022

52 Upper St, London N1 0QH, United Kingdom

<https://www.wearabletechnologyshow.net/home>

Data Center World

28th-31st March, 2022

500 E Cesar Chavez St, Austin, TX 78701, United States

<https://www.datacenterworld.com/>

Tech & Trade Offers

RENTAR FUEL CATALYSTS and MAX-R 100 ACTIVE REFRIGERANT AGENT

We are authorized partner/resellers of RENTAR www.rentar.com Fuel Catalysts Products & CITC Products in Pakistan. Please find below short introduction to our products which you can offer as solutions to our client to meet their environmental standards compliance needs.

Rentar Fuel Catalysts helps to reduce air pollution (CO₂, NO_x, CO, SO₂, Particulate Matter and Black Smoke), reduce fuel consumption to save money and also reduce maintenance costs by extending time between oil changes.

MAX R 100 is an intermetallic compound technology that, when introduced into the Refrigerant oil of a system, form a permanent bond to metal surfaces. This action removes oil fouling, changes the thermal nature of the metal and lowers the boiling point of the refrigerant gas, resulting in a efficient operating system and more substantial savings in ENERGY.



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About PASTIC

PASTIC serves as a gateway for Scientific & Technological Information for R&D by catering to the information needs of researchers, entrepreneurs, industrialists, educationists, policy makers and planners through anticipatory and responsive information services.

Technology Information Section works exclusively for support and promotion of technological information on trade and industry in the country. "Technology Roundup" is a news bulletin that provides latest and innovative technology news, forthcoming events, etc. It also promotes products, technologies and services globally in sectors such as Agro-Industry, Bio-Technology, Building Material, Business, Chemicals, Electronics, Energy, Fisheries, Food Processing, Machinery, Packaging, Mining Pharmaceuticals and Textiles.

Please give us your feedback and address queries to tis.pastic@gmail.com