

TECHNOLOGY ROUNDUP

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- Solar Pakistan
- International Conference on Advances in Engineering and Technology
- National Exhibition on IT & Computer Tools for Science and Education
- ITCN Asia IT & Telecom Show
- International Conference on Renewable and Clean Energy
- Asian Science and Technology Conference on Disaster Risk Reduction
- International Energy Conference
- International Science and Technology Conference

Indigenous Technology

Online Business Registration Portal launched at Lahore

In order to facilitate business registration from the comfort of one's home, PITB launched an online portal at the Lahore Chamber of Commerce and Industry (LCCI), yesterday. The Online Business Registration Portal has been



developed by the Punjab Information Technology Board for LCCI. Now, the online portal could be used to register a company very quickly as the owners will be able to submit all documents online. A tracking mechanism has also been added to keep the users updated about the progress of their application at run-time. Currently, the portal has been made functional in the Lahore district boundary and it will soon be extended

to the rest of the districts in Punjab. In order to cater any queries/issues regarding the portal, government has also dedicated a telephone helpline which can be accessed by dialing 042-111-425-725.

The portal revolves around the tagline of, “Anytime, anywhere”, indicating the ease of business registration which comes with it. The portal will increase the productivity and efficiency of the process as the users will not have to physically visit the offices. Reports say that the registration process, which previously required approximately 17 days, can now be completed in a matter of two days.

The launching ceremony took place at the Lahore Chamber of Commerce and Industry and was attended by Chairman PITB Dr. Umar Saif, Provincial Minister for Finance Ms. Ayesha Pasha, and Malik Tahir Javaid, the President LCCI among many other high order officials.

Source:

www.techjuice.pk/online-business-registration-portal-launched-at-lahore

Indigenous Technology

Govt Launches App to Fight Extremism Online

Pakistan ranks 5th out of 163 countries on the Global Terrorism Index ([GDI](#)). In recent years, terrorism in Pakistan has become a highly destructive phenomenon and the abuse of internet has also increased extremism and hate speech. In its efforts to counter extremism online, Pakistani govt has now launched an application that will enable people to report websites that publish extremist content and hate speech. As reported by [VOA News](#), the app named [Surfsafe](#) has been developed by the National Counter Terrorism Authority (NACTA). The app works on both Android and iOS devices. The Surfsafe app is the part of the



implementation of the National Action Plan (NAP), adopted by the government in 2015 to crack down on terrorism and extremism. However, social media experts believe that restricting the presence of terrorists on the internet is a difficult task now because militant networks have become more tech-savvy over the past few years.

According to Ehsan Ghani NACTA Director, “Strict enforcement of cybercrime laws is absolutely necessary to overcome this massive challenge of online extremism. Surfsafe is a step in that direction. Through this programme [application], we will create awareness and block online materials involved in provoking extremism in any capacity.” As people in Pakistan mostly youth, unfortunately, get attracted to extremist ideologies without even realizing that what it's all about, hence this app will definitely help at least by blocking extremist content online.

So far, around 18 URLs were reported on the website and the authorities have flagged 4 of them. Furthermore, NACTA is also playing an encouraging role for Pakistani community by rolling out e-Scouts. e-Scouts are the team of volunteers, who will be cyber-policing for NACTA. You can become one by following this [link](#). On the contrary, critics believe that unless the government stops the terrorist groups' activities on the ground, silencing them on the internet would not be that effective.

Source:

www.techjuice.pk/govt-launches-app-to-fight-extremism-online

Deep-brain Exploration with Nanomaterial:

A less invasive way to stimulate the mouse brain with light

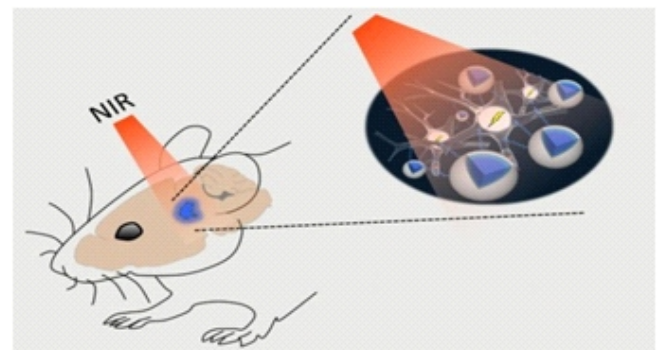
Studying deep brain tissues noninvasively is difficult. Now scientists have developed a way to send light deep into the brain without invasive optical fibers. The method uses infrared light outside the head to activate upconversion nanoparticles (UCNPs). When these nanoparticles absorb near-infrared laser light, they emit visible photons to deep areas in the brain, allowing remote optogenetic stimulation or inhibition of neurons in the brain.

Near-infrared (NIR) light applied above the skull can easily pass through brain tissue with minimal scattering and reach deep structures. Up-conversion nanoparticles (UCNPs; blue) in the tissue can absorb this light and locally emit visible light sufficient to activate light-sensitive channels expressed in nearby neurons.

"Optogenetics has been a revolutionary tool for controlling neurons in the lab, and hopefully someday in the clinic," says Thomas McHugh, research group leader at the RIKEN Brain Science Institute in Japan. "Unfortunately, delivering light within brain tissue requires invasive optical fibers."

In optogenetics, blue-green light is used to turn neurons on or off via light-responsive ion channels. Light at these wavelengths, however, scatters strongly and is at the other end of the spectrum from the near-infrared light that can penetrate deeper into brain tissue. UCNPs composed of elements from the lanthanide family can act as a bridge. Their 'optogenetic actuation' turns low-energy near-infrared laser light into blue or green wavelengths for control of specifically labeled cells. Though such bursts of light deliver considerable energy to a small area, temperature increases or cellular damage were not observed.

In addition to activating neurons, UCNPs can also be used for inhibition, for example to quell experimental seizures in mice. Memory recall in mice also persisted in tests two weeks later. This indicates that the UCNPs remained at the injection site, which was confirmed through microscopy of the brains. "The nanoparticles appear to be quite stable and biocompatible, making them viable for long-term use. This study was collaboration between scientists at the RIKEN Brain Science Institute, the National University of Singapore, the University of Tokyo, Johns Hopkins University and Keio University.



Source:

www.sciencedaily.com/releases/2018/02/180208141311.html

New Method to detect illicit Drone Filming Developed

A new technique to detect a drone camera illicitly capturing video is revealed in a new study by cyber security researchers in Israel. The study addresses increasing concerns about the proliferation of drone use for personal and business applications and how it is impinging on privacy and safety. "The beauty of this research is that someone using only a laptop and an object that flickers can detect if someone is using a drone to spy on them," says Ben Nassi, a Ph.D. student in the BGU Department of Software and Information Systems Engineering and a researcher at the BGU Cyber Security Research Center (CSRC). "While it has been possible to detect a drone, now someone can also tell if it is recording a video of your location or something else."

In the first demo, researchers show how a privacy invasion against a house can be detected. They used smart film placed on a window and entered a few software commands on a laptop to access the encrypted video the drone operator sees, called the FPV channel. This enabled the researchers to demonstrate how they detect that a neighbor is using a DJI Mavic drone to capture images of his own home and then illicitly stream video of his neighbor's house, as well. In a second outdoor test, researchers demonstrate how an LED strip attached to a person wearing a white shirt can be used to detect targeted drone activity. When researchers flickered the LED lights on the cyber-shirt, it caused the FPV channel to send an "SOS" by modulating changes in data sent by the flickering lights.

"This research shatters the commonly held belief that using encryption to secure the FPV channel prevents someone from knowing they are being tracked," Nassi says. "The secret behind our method is to force controlled physical changes to the captured target that influence the bitrate (data) transmitted on the FPV channel." This method can be used on any laptop that runs Linux OS and does not require any sophisticated hacking or cryptographic breaking skills. "Our findings may help thwart privacy invasion attacks that are becoming more common with increasing drone use," Nassi says. "This could have significant impact for the military and for consumers because a victim can now legally prove that a neighbor was invading their privacy."

Source:

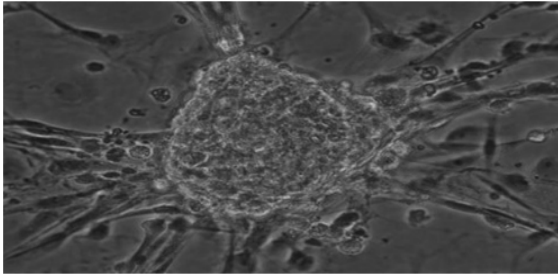
www.sciencedaily.com/releases/2018/01/180115120558.html

Efficient Technique discovered for isolating Embryonic Stem Cells in Cows

Findings could advance cattle production, help study human disease

Scientists have developed a highly efficient method of isolating embryonic stem cells in cows. Producing embryonic stem cells from large livestock species like cattle is important for genetic testing, genome engineering, and studying human disease.

In a study published this week in the journal *Proceedings of the National Academy of Sciences*, scientists at the University of California, Davis, were able to develop a new culture system that allows them to efficiently derive stem cells on almost every single attempt.



Producing embryonic stem cells from large livestock species like cattle is important for genetic testing, genome engineering and studying human disease. If researchers can generate gametes, or sperm and eggs cells, from the stem cell lines, the ramifications are profound. Such "in vitro" breeding could decrease the amount of time it takes to produce genetically superior cattle.

The cow of the future could have more muscle, produce more milk, emit less methane, or more easily adapt to a warmer climate. Ross envisions the findings helping the cattle industry become more sustainable.

"Animals that are more efficient and have improved welfare, that may have more disease resistance is better for everyone," said Ross.

Source:

www.sciencedaily.com/releases/2018/02/180209170526.html

New Technology for Accelerated Wound Healing Discovered

Researchers have found a new way of accelerating wound healing. The technology and the mode of action involves using lactic acid bacteria as vectors to produce and deliver a human chemokine on site in the wounds. The research group is the first in the world to have developed the concept for topical use and the technology could turn out to be disruptive to the field of biologic drugs.

"We have developed a drug candidate, a next-generation biologic medical product, and are now publishing the fantastic results from the preclinical part where wound healing was strongly accelerated in mice," says Mia Phillipson, Professor at the Department of Medical Cell Biology, Division of Integrative Physiology, Uppsala University. The acceleration of the healing process occurs due to changes in the microenvironment in the wound, which change the behaviour of specific immune cells. With the newly developed technology, the researchers can increase the level of a chemokine, CXCL12, for a sufficient time period through continuous delivery directly to the wound surface. In addition, bioavailability of CXCL12 is synergistically increased within the wound as the bacterial produced lactic acid causes a slight pH drop that inhibits degradation.

"The chemokine, CXCL12, is endogenously upregulated in injured tissue and by increasing the levels further, more immune cells are recruited and are more specialised to heal the wound, which accelerates the whole process," says Professor Phillipson. The potent effect on acceleration of wound healing is demonstrated in healthy mice but also in two models of diabetes, one model of peripheral ischemia as well as in a model using human skin biopsies.

There were clear differences in the composition of immune cells in the wounds and the immune cells present produced higher levels of TGFβ at earlier time points. The treatment was local without systemic exposure. "This is very exciting from a health care perspective. We have a technology that works and now understand the mechanism behind it, how it accelerates wound healing. The next step is a study in a pig model," says Professor Phillipson.

Source:

www.sciencedaily.com/releases/2018/02/180205161522.html

Global warming could cause key culinary crops to release seeds prematurely

Climate change is threatening crop yields worldwide, yet little is known about how global warming will confuse normal plant physiology. Researchers now show that higher temperatures accelerate seed dispersal in crop species belonging to the cabbage and mustard plant family, limiting reproductive success, and this effect is mediated by a gene called INDEHISCENT.



This photograph shows oilseed rape pods that are opening and spreading the seeds. Credit: Andrew Davies / John Innes Centre

"In many crops, such as oilseed rape, premature seed dispersal is one of the major causes of crop loss. In the context of climate change, this could become increasingly severe," says co-senior author Vinod Kumar, a plant developmental biologist at the John Innes Centre in Norwich, England. "This study exposes the potential vulnerabilities of crop production in the warming world and paves the way for addressing this problem."

"We were excited by the discovery that what we found in the model plant *Arabidopsis* also holds true for both crop plants, such as oilseed rape, as well as non-domesticated species from the Brassicaceae family," Kumar says. "This highlights the significance of our findings both in the wild as well as in the field."

Based on their study, the research team suggests new strategies for preparing crops for global warming. For example, plant breeding efforts could focus on developing temperature-resilient varieties capable of coping with climate change. In addition, gene-editing tools, such as the CRISPR/Cas system, could be used to reduce the expression of the INDEHISCENT gene, thereby delaying seed release and reducing crop loss.

For their own part, Kumar and Østergaard plan to further investigate the molecular mechanisms underlying temperature-induced changes in seed dispersal. "We are hopeful that by understanding this in detail, we will be better equipped to devise strategies to breed for crop resilience to climate change."

Source:

www.sciencedaily.com/Releases/2018/02/180212121238.html

Chemists Harness artificial Intelligence to Predict the Future (of chemical reactions)

To manufacture medicines, chemists must find the right combinations of chemicals to make the necessary chemical structures. This is more complicated than it sounds, as typical chemical reactions employ several different components, and each chemical involved in a reaction adds another dimension to the calculations.



Credit: CC0 Public Domain

In an ideal world, chemists would like to predict which combination of chemicals would deliver the highest yield of product and avoid unintended by-products or other losses, but predicting the outcome of these multi-dimensional reactions has proven challenging. A group of researchers led by Abigail Doyle, the A. Barton Hepburn Professor of Chemistry at Princeton University, and Dr. Spencer Dreher of Merck Research Laboratories, has found a way to accurately predict reaction yields while varying up to four reaction components, using an application of artificial intelligence known as machine learning. They have turned their method into software that they have made available to other chemists. They published their research Feb. 15 in the journal Science. "The software that we developed can work for any reaction, any substrate," said Doyle. "The idea was to let someone apply this tool and hopefully build on it with other reactions."

Vast resources and time are expended to make synthetic molecules, often in a largely ad hoc manner, she said. Using this new software, chemists can identify high-yielding combinations of chemicals and substrates more cheaply and efficiently. "We hope this will be a valuable tool in expediting the synthesis of new medicines," said Derek Ahneman, who completed his chemistry Ph.D. in Doyle's lab in 2017 and now works for IBM.

"Many of these machine learning algorithms have been around for quite some time," said Jesús Estrada, a graduate student in Doyle's lab who contributed to the research and the paper. "However, within the synthetic organic chemistry community, we really haven't tapped into the exciting opportunities that machine learning offers." "As chemists, we've traditionally veered away from multi-dimensional analysis," said Doyle. "We only look at one variable at a time, or a single set of conditions for a range of substrates."

Source:

www.phys.org/news/2018-02-chemists-harness-artificial-intelligence-future.html

Forthcoming Tech Events

National

Solar Pakistan

29-31 March, 2018
Expo Center, Lahore
www.solarfairpakistan.com

International Conference on Advances in Engineering and Technology

2-3 April, 2018
Quetta, Balochistan
www.indico.cern.ch

National Exhibition on IT & Computer Tools for Science and Education

8-9 May, 2018
Pak China Center, Islamabad
www.pastic.gov.pk

ITCN Asia IT & Telecom Show

25-27 September, 2018
Expo Center, Karachi
www.itcn.asia.com

International Events

International Conference on Renewable and Clean Energy

30 March-1 April, 2018
Tokyo, Japan
www.icrce.com

Asian Science and Technology Conference on Disaster Risk Reduction

17-18 April, 2018
Limoassol, Cyprus
www.enegycon2018.org

International Energy Conference

3-7 June, 2018
Limassol, Cyprus
www.energy.con2018.org

International Science and Technology Conference

18-20 July, 2018
Paris, France
www.iste-c.net

Tech & Trade Offers

Engro Fertilizer

✍ Engro Fertilizers Limited a 87% owned subsidiary of Engro Corporation is a premier fertilizer manufacturing and marketing company having a portfolio of fertilizer products with significant focus on balanced crop nutrition and increased yield.

✍ As one of the 50 largest fertilizer manufacturers of the world we have close to 5 decades of operations as a world class with a wide range of fertilizer brands, besides urea, which include some of the most trusted brand names by Pakistani farmers.

✍ These include brands like Engro Zarkhez, Zingro, Engro DAP and Envy amongst others.



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