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According to British Council's Shape of Global Higher Education report, Malaysia's consistent support for international engagement has placed it as the top country for Internationalisation of Higher Education.

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Currently ranked the 12th Most Preferred Education Destination in the World (UNESCO, 2014), Malaysia offers internationally recognised education, with quality programmes, discerned academia, dynamic learning environment and a cosmopolitan lifestyle, all at an affordable cost.

RISING IN RANKINGS

QS World University Rankings has University of Malaya (UM) at number 133 with 3 other public institutions ranking within top 350 in the world amongst 30,000 universities globally.

Based on subject rankings, Development Studies and Electrical & Electronic Engineering at UM ranks 30 and 37 in the world, Chemical Engineering at Universiti Sains Malaysia (USM) ranks 46 and 23 other subjects including Environmental Science, Agriculture & Forestry, Education, Architecture/Built Environment, Computer Science & Information Systems, English Language & Literature rank amongst the top 100.

By Faculty Ranking, Life Science & Medicine at UM ranks 48, Social Science & Management at UM rank 69 and USM 89 and for Engineering & Technology, UM, USM and Universiti Teknologi Malaysia (UTM) ranks 54, 84 and 100 respectively.

LEADING IN RESEARCH & PUBLICATIONS

Malaysia's research landscape grew by 594% between 2005 to 2014. Since the inception of Malaysia Research Universities in 2007 (UM, UTM, USM, UKM & UPM), Malaysia's publications of scientific journals have increased by 300%, citations increased by 400% and publications produced by research universities increased by 70%. 41% of global scholarly publications on Islamic Banking between 2009-2014 originates from Malaysia. 11% of the world's publication on Islamic Finance originates from International Islamic University Malaysia (IIUM).

STRATEGIC INDUSTRY LINKAGES

Malaysia is home to reputable foreign multinationals and is also the proud owner of dynamic home grown companies which has evolved to become global leaders. Many institutions in Malaysia forge collaborations with leading industries on projects, research, training, internship and employment, for talent development.

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(Higher Education in Asia: Expanding Out, Expanding Up)
By UNESCO

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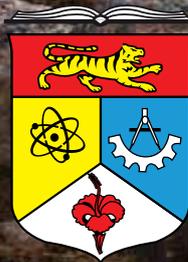
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Nunzio Quacquarelli

on keeping the world's universities alive and their graduates employed

By Tony Martin



QS WOWNEWS hails from the stable of global higher education media owner and analysts, QS Quacquarelli Symonds, whose CEO is Cambridge MA and Wharton MBA, Nunzio Quacquarelli.

The global perspective that Nunzio Quacquarelli has acquired over his 27 years at the helm of QS comes from his dealings with hundreds of university leaders around the world and his observation of the major developments that their institutions have experienced. QS is, of course, best known for its extensive portfolio of rankings of the world's universities. It sensationally broke new ground in 2004 with the launch of QS World University Rankings in collaboration with John O'Leary, former education editor of The Times Newspapers.

After graduation from Oxford in 1967, Tony Martin spent his communications and marketing career working alongside the world's universities. He completed it with 13 years in senior positions at QS.

In December 2016, Tony conducted a comprehensive interview with Nunzio that QS WOWNEWS will serialise throughout 2017. During their discussion, they addressed current challenges of global higher education development and how QS activities are supporting them in a visionary and proactive fashion.

In this first instalment, Nunzio presents his views on two key aspects of modern university management – sustaining universities' core *raison d'être* within increasing financial constraints, and assuring the employability of their graduates.

"A major cause of concern for university leaders around the world is reconciling the creation, management and communication of leading-edge research and knowledge with the increasing financial constraints of sustaining their institutions," begins Nunzio. "University rankings contribute one solution as, by shining a light on real excellence in university research performance, they provide transparency for governments in the allocation of funding."

Nunzio points out that, although this wasn't an intention when launching the QS rankings, there are now many schemes where governments are providing dramatically increased funding to enable their leading universities rise to world-class level, which is measured largely by such rankings. "Several countries have a stated objective that a number of their universities should reach the world's top 200," he says. "The governments of China, Russia,

Germany, Japan, Saudi Arabia and Brazil, to name but a few, are now funnelling more research funds into their high quality universities for that purpose."

We turn our attention to the contribution to university funding of the commercial sector. Nunzio observes that, in the knowledge economy, many companies realise they need to collaborate with universities to produce more research and development. "Rankings help here too," he says. "They provide guidance to research departments in the corporate world that enables them to identify institutions with which they want to collaborate. I predict that corporate funding of research is only going to increase in the competitive knowledge economy."

Funding for research also comes increasingly from alumni donations, foundations and other sources that institutions are getting more sophisticated at accessing and developing. "I think we're going to see a growing segmentation between research intensive and teaching universities," Nunzio forecasts. "The former rely on myriad sources of funding and will be able to continue to do so because of the high quality and importance of their research in the knowledge economy." He believes that the latter will be less able to sustain a research infrastructure, and that they will be even more concentrated on teaching and providing the access and community needs of their local population. "This second group may be under even more pressure because of the growth in online delivery of education and of more sophisticated technology," he continues, "so we'll see changes in the models of teaching and learning around the world, progressively integrating technology."

Given that teaching and nurturing graduate employability are at the core of university missions, I asked Nunzio how he foresees higher education curricula and delivery evolving to sustain the employability of new degree holders. Again he is able to show how QS has both perceived trends and responded to them through the creation of QS Reimagine Education.

"It is exactly our desire at QS to shine a light on excellence across the various missions of universities that encouraged us to launch a global award scheme in a partnership with the Wharton School at the University of Pennsylvania," says Nunzio. "The scheme is the Wharton QS Reimagine Education Awards which have just completed their third year. We set out to make them the 'Oscars' of higher education and we are on a path to achieving that."

The mission of the awards is to shine a light on universities' excellence and innovation in learning, teaching and, very importantly, nurturing employability. "At our 2016 Reimagine Education Conference, over 800 universities and tech enterprises submitted applications, from which 140 entries were shortlisted," explains Nunzio. The judging panel included heads of education from Google, Microsoft and IBM, and experts from education departments of leading universities and online education innovators. He adds: "This has enabled us to identify some of the trends that are emerging to support nurturing employability and excellence in teaching and learning."

Nunzio draws on submissions for Reimagine Education Awards to illustrate some of these trends. "I could give you

a whole host of case studies, but perhaps I can identify just a few key strategies that universities are adopting. First, there is an increase in focus on active learning – that is learning by doing,” he explains. “Students are no longer going to be sitting in a classroom simply being fed information by a professor, expected to learn by rote and to regurgitate the knowledge in examinations. Active learning entails projects, assignments, participation in a learning environment.”

One of the overall winners of the 2016 awards was the London School of Economics which has introduced active learning with the concept of students as producers. “This is truly innovative,” says Nunzio. “Students are now co-creating the content of courses with the professors. The professors don’t get up and lecture at all. The students are given information and access to video and other tools, then produce materials. They deliver this content to their fellow students, who then evaluate them in terms of learning outcomes, and this is moderated by the professor. That’s truly active learning. Imagine, if you have to teach something, you really have to first understand the content.”

Nunzio also sees emerging a real focus on personalised learning, or adaptive learning. “Institutions are using detailed data analytics on students’ performance using technological tools to adapt the learning to that student’s ability, so that every student has a completely different learning experience,” he points out. “This is becoming widespread within high school environments and is also penetrating the higher education environment.”

Use of gamification is another new area of development. This is very contemporary as it appeals to young people who have grown up with mobiles and video games. “Virtual reality and augmented reality are becoming very active,” says Nunzio. “A second winner of our awards was a company called Labster which produces a virtual reality surgical environment. This means that students don’t need access to physical operating theatre equipment. They can use virtual reality facilities to train and practise surgical procedures as if using multi-million pound equipment. This trend is transforming the learning experience for many students who don’t have access to the facilities of the richer universities.”



Artificial intelligence is another new phenomenon emerging in the higher education space. “Artificial intelligence is supporting areas of student counselling such as careers, and the whole student experience,” explains Nunzio. “For example, Australia’s Deakin University has a tool called Genie with which students, using an artificial intelligence machine, can manage their whole curricula and interaction with university support. This is not only transforming the student learning experience, it is also helping to develop skills that make students more employable in the digital economy.”

“I could add many more fascinating examples,” Nunzio concludes. “There is a tremendous amount of innovation to support new learning techniques and methodology. The net effect of these is to help employability of university graduates, partly by giving them the invaluable workplace soft skills – such as communication, teamwork and initiative – that arise from greater interactivity while learning, partly by using the same technology and systems that are being deployed in the very companies where they will work. This is a very exciting era in which to be engaged with developments in global higher education.”



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Mapúa's research on self-cleaning membrane shows excellent resistance to contamination

The Philippines – A research done by a Biological Engineering graduate of Mapúa Institute of Technology found a way for *Polydimethylsiloxane* (PDMS) to resist contamination to *E. coli* bacteria, thus becoming reusable and cost-effective especially when used in medical devices.

“Taking advantage of the principle of reusability and cost-effectiveness, this can be applied to other PDMS materials used in the medical field such as in micro tubing, skin grafting, and implants, among others,” Jacqueline De Vera, the researcher, said.

Her research entitled *Self-cleaning surface control of Polydimethylsiloxane (PDMS) grafted-onto pH-sensitive Zwitterionic Poly (GMA-SBMA-DMAEMA) Copolymer*, which won the top prize in the Magsaysay Future Engineers/Technologists Award of the National Academy of Science and Technology on 5 December 2016, showed that the biofouling problem common among biomaterials can be solved through transforming the material into a self-cleaning surface.

Biofouling is the nonspecific adsorption of proteins, cells, and microorganisms onto the material surface hindering the performance and efficiency of a biomaterial, in this case the PDMS – a biomaterial suffering from high biofouling attributed to its low wettability and hydrophobicity – thus posing a problem in terms of device efficacy and safety.

According to De Vera's research paper, “the uncontrolled adhesion of biological compounds on the surface of implant materials is a harmful phenomenon that causes the function of medical devices to deteriorate.” The deterioration of the biomaterial implanted may cause blood clots around the material's surface, which blocks the sensor or prevents the release of drug from the device and ultimately result in implant rejection.

“To solve the biofouling problem, I took a thin film of the PDMS membrane and turned it into a surface that resists contamination, a self-cleaning surface,” De Vera said. Self-cleaning surfaces resist adhesion to contamination by simply washing the material with a high pH solution. The self-cleaning surface of PDMS washed in pH 10.0 solution showed an excellent performance in releasing 99.6% *E. coli* bacteria, which according to De Vera was the main highlight of the research.

“Initially, I tested the self-cleaning surface's resistance to *E. coli* bacteria. For further research, it can be tested on a number



Mapúa Institute of Technology Biological Engineering graduate Jacqueline De Vera presenting her paper *Self-cleaning surface control of Polydimethylsiloxane (PDMS) grafted-onto pH-sensitive Zwitterionic Poly(GMA-SBMA-DMAEMA) Copolymer* during the Magsaysay Future Engineers/Technologists Award of the National Academy of Science and Technology at Luxent Hotel, Quezon City, on 5 December 2016

of microorganisms,” De Vera stated. She added that due to the proven ability of the biomaterial to resist microorganisms, it renders the material to be reusable, durable, and cost-effective.

Self-cleaning surfaces promote removal of adhered microorganisms after a response from an external stimulus such as a change in pH. The research said “since pH is a chemical property that can be easily observed and changed in a solution, self-cleaning surfaces that involve pH-responsive characteristics show promising potential in the removal of adhered foulants.”

De Vera's research is just one of the research projects on membrane technology being done at Mapúa. The opening of Mapúa's research building in 2014 was a definitive start of the Institute's initiatives to strengthen its research, development, and innovation capabilities. The research building, a state-of-the-art facility for various laboratories, currently houses active research on nano-membrane technology wherein student and faculty researchers develop membranes for applications in environmental engineering, science, and biomedical engineering.

QS WOWNEWS

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Editorial Profile

QS WOWNEWS features news and views on higher education achievements and developments across the globe, which are extraordinary and outstanding.

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Editor

Cyrus Tabatabaei (cyrus@qs.com)

Advertising Sales Contact

Worldwide:

Mandy Mok (mm@qs.com)

Middle East, Africa, India & Sri Lanka:

Ashwin Fernandes (ashwin@qs.com)

North America:

Terrence Henderson (terrence@qs-asia.com)

Japan:

Hiro Yoshimori (hiro@qs-asia.com)

China:

Yolanda Yang (yolanda@qsasia.cn)

Advertisement Coordinator:

Grace Kim (grace@qs.com)

Design and Print Management

Lynn Chua

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20 Sin Ming Lane #02-61 Midview City,
Singapore 573968
Tel: +65 6457 4822; Fax: +65 6457 7832;
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US\$26 million gift from Alibaba founder to the University of Newcastle, largest in its history



Australia – The Chinese have a saying that when you drink water, think of its source. In other words, never forget your roots. Jack Ma, the Chinese founder of the internet giant Alibaba, has turned those words into an enormous gesture, donating more than US\$26 million to the University of Newcastle.

The man, estimated by Forbes to be worth US\$28.4 billion, is giving US\$20 million through his foundation to fund a scholarship programme at the university.

Mr Ma is giving the money to honour the city that he first visited in 1985, and, in particular, one Novocastrian family, the Morleys.

The bond between Jack Ma and the Morleys was forged in 1980. The teenager Ma Yun, as Mr Ma was known then, saw a boy about his age in the park in his home city of Hangzhou and approached him to practise English. That boy was David Morley.

The Morleys arranged for Mr Ma to visit their hometown in 1985. As Mr Ma revealed to a packed auditorium, the effort to simply get a passport and visa was exhausting. But it was worth it.

With the donation being the largest philanthropic contribution in the university's history, it was also a historic day for Newcastle.

"That he views this as so significant, so important to him, that he would personally come to be here is a really strong symbol," said the University of Newcastle's vice chancellor, Professor Caroline McMillen.

At full capacity the Ma and Morley Scholarship Programme would support 90 students a year. The programme would be advertised from the middle of this year, and Professor McMillen said the recipients would include students from financially disadvantaged backgrounds and indigenous scholars.



Jack Ma and David Morley in 1980

Amity becomes Asia's only not-for-profit university with WSCUC accreditation

India – Recently, Amity set a new standard of academic excellence by becoming Asia's only not-for-profit university to obtain the prestigious US regional accreditation by WASC Senior College and University Commission (WSCUC), USA.

This prestigious accreditation marked five years of unyielding efforts, numerous visits from leading American academicians and Amity's relentless pursuit to surpass the highest standards of educational excellence.

WASC is a leading US accrediting body that is one of the six official commissions responsible for the accreditations of universities and colleges in the United States and around the world. The WASC Senior College and Universities Commission has been recognised by the U.S. Department of Education as a reliable authority concerning the quality of education provided by the institutions of higher education. The Commission encourages continuous institutional improvement through its work of peer review, and assures all stakeholders that accredited institutions are fulfilling their missions in service to their students and the public good.

The accreditation was not just offered to Amity University Noida and Greater Noida Campuses in New Delhi NCR, India, but also to Amity University Dubai. WASC has awarded this accreditation to Amity based on stringent parameters such as student learning and success, institutional integrity and development of faculty and resources to ensure exemplary standards of quality.

This prestigious accreditation is testimony to Amity's abiding commitment to educational excellence, through numerous initiatives like academic restructuring towards outcome based education, development of a strategic framework as per international practice and realignment of processes and systems for operational effectiveness.

Many factors have contributed to Amity achieving this prestigious US accreditation right from its focus on research and innovation, globally benchmarked infrastructure, and teaching pedagogy to its commitment to striving for excellence in education and beyond.

For instance, Amity scientists and faculty have filed more patents than any other

institution in India as per the Annual Report of the Controller General of Patents, Government of India. Further, numerous case studies developed by Amity faculty have been bought across 62 countries by leading institutions like Harvard, Stanford, Oxford, McKinsey, and KPMG amongst others.

Amity has also instituted India's largest scholarship programme, and has awarded scholarships to over 25,000 students. Amity offers these bright students a choice of over 300 undergraduate as well as postgraduate programmes across 60 diverse disciplines from management to psychology, besides future-focussed areas like renewable energy and nuclear science.

Today, the Amity community of outstanding students has exceeded over 60,000 alumni worldwide, who are successfully pursuing their career in top organisations or have been selected by leading institutions like Stanford, Columbia and California.



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Singapore – This city state has one of the fastest ageing populations in the world, the result of a low fertility rate and steadily rising life expectancy. Older Singaporeans are still supporting their elderly parents, knowing that when their time comes they will have fewer children who can support them. This has contributed to growing concern about the ability of many Singaporeans to finance their retirement.

In 2014, a team of researchers at Singapore Management University (SMU) and their international collaborators won a Singapore Ministry of Education Academic Research Fund Tier 3 grant to study this issue, the first social science project to receive such a grant. The Centre for Research on the Economics of Ageing (CREA) at SMU's School of Economics was established and thus began a five-year research programme on retirement adequacy, based on a large-scale data collection effort.

A population-representative cohort of Singaporeans aged between 50 and 70 years old and their spouses were recruited in July 2015 to take a monthly survey via the internet. They are called the Singapore Life Panel® (SLP). Every month, over 8,000 responses are received to these surveys which contain detailed questions about economic variables such as employment, income and expenditure, other contributing factors such as health and household structure, and also indicative measures such as expectations and subjective well-being.

A longitudinal study of this size, format and high frequency is unprecedented. Minimal panel attrition is achieved with a

major outreach effort including technical assistance provided by SMU students employed by CREA who meet at designated times and venues with participants who are less confident with computer use and the internet. As of January 2017, CREA is in wave 18 of the survey.

In most longitudinal data collection programmes, the survey is fielded every two or three years. However, in the case of the SLP, concurrent research is being conducted as each wave of data is added on. Researchers receive the documentation and clean data, just a few weeks after the month of collection. This places tremendous pressure on the staff and researchers who, at the same time, are preparing and fielding the upcoming surveys. The methodology and infrastructure developed for the SLP have provided SMU with the capability for data collection and survey research on other important issues that impact on Singapore and the region.

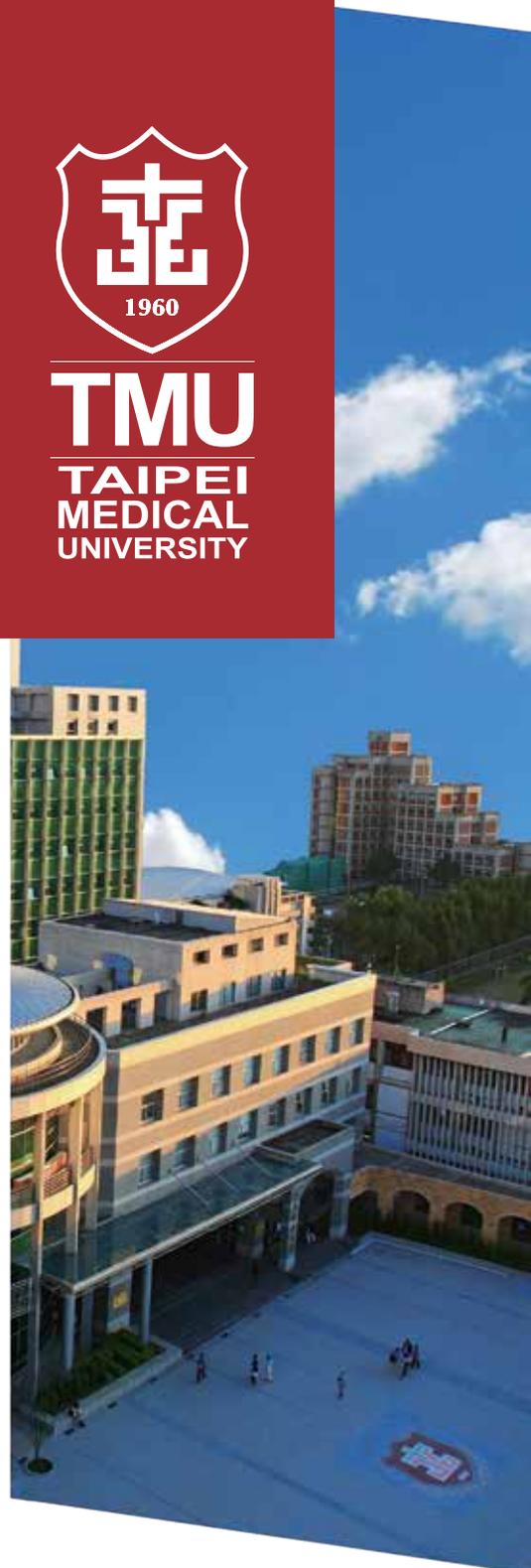
Professor Bryce Hool, dean of SMU's School of Economics and director of CREA, commented: "The SLP provides a window into the circumstances of Singaporeans approaching or beyond retirement. It enables us to see how changes in these circumstances affect their behaviour and this will be used for predicting their future situation. By making high-quality research available to public and private sector agencies, we hope it will translate into actions that will enhance the quality of life for Singaporeans."

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Chung-Ang University researchers make the cover of prestigious journal



CAU Professor Hong Jin-gi and PhD candidate Jeong Hye-joong

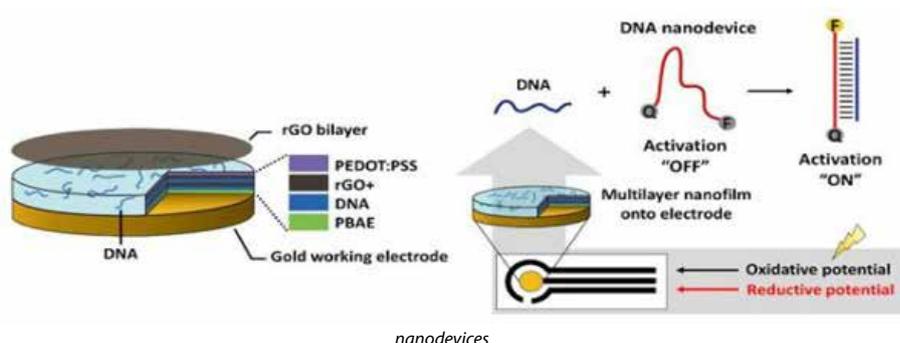
South Korea – A research team from Chung-Ang University(CAU), led by Professor Hong Jin-gi and under the auspices of the Korea – EU Joint Research Program (supported by the Ministry of Science, ICT and Future Planning), have had their article featured on the cover of the journal *Small*, a renowned journal in the field of nanotechnology.

Professor Hong Jin-gi (School of Chemical Engineering and Material Science) and PhD candidate Jeong Hye-joong conducted a joint research with Professor Francesco Ricci of University of Rome Tor Vergata, titled “Electronic Activation of a DNA Nanodevice Using a Multilayer Nanofilm”.

DNA has become a most important biological material: its ability to self-assemble in a highly predictable manner, its low synthesis cost and biocompatibility

have been utilised to develop a variety of nanostructures and functional DNA-based nanodevices for biomedical applications. DNA nanodevices are nanomechanical supramolecular structures which can perform a variety of tasks and nanoscale movements, and can be applied in the areas of diagnosis, biosensing, bioimaging, and drug delivery.

However, the complementary bonding nature of DNA strands makes it difficult to control the activation of a DNA nanodevice. To better control the activation of DNA-based nanodevices, the researchers prepared a multilayer nanofilm on the surface of a chip-electrode using a layer-by-layer (LbL) assembly method, and regulated the spontaneous activation of DNA nanodevices.



nanodevices

“In this study, we demonstrated a method to regulate the spontaneous activation of DNA nanodevice by introducing on demand cDNA release system of an electro-responsive multilayer nanofilm. To the best of our knowledge, this is the first attempt to adjust DNA nanodevice using multilayer nanofilm. On the basis of our report dealing with the most basic form of DNA nanodevice, we can modulate it into more advanced forms using other kinds of triggers or functional DNA-based nanodevices including various functions such as drug delivery, pH-responsibility, and enzyme or gene detection for biomedical applications. We believe our approach can provide a new platform to DNA-based nanodevices,” Professor Hong said.

TMU president elected as National Academy of Inventors Fellows 2016

Taiwan – The USA’s National Academy of Inventors (NAI) recently announced its fellow election results of the 2016 class. Dr Yun Yen, president of Taipei Medical University (TMU), amongst the 175 luminaries from around the world, was recognised for his outstanding academic achievement in cancer research and translational medicine.

A world-renowned oncologist, Dr Yen is also an established researcher who specialises in the discovery and development of nanodrugs. Through his collaboration with California Institute of Technology and Case Western Reserve University over the years, Dr Yen has made considerable contributions with regards to the improvement of cancer treatment as well as the enhancement of care practice. Under his leadership, teams

of medical researchers are devoted to finding innovative solutions to treating cancers.

Following the announcement of results, NAI complimented Dr Yen and his fellow elects for their “outstanding contributions to innovation in areas such as patents and licensing, innovative discovery and technology, significant impact on society, and support and enhancement of innovation”.

Since he took office in August 2011, Dr Yen has supported the launch of several research initiatives to inspire finding solutions for health problems that are affecting our world. With years of experience in drug discovery, Dr Yen believes that TMU’s recent investment in expanding its core facilities will help the university to build on its existing success and foster world-class research in basic science,

clinical research, medical devices, and biomarker development.

This year, in addition to Dr Yun Yen, there are two other NAI Fellow elects from Taiwan: Dr Liang-Gee Chen, current political deputy minister of education, and Dr O Y-P Hu, distinguished professor in pharmacy at National Defence Medical Center.





Hanyang Never Sleeps

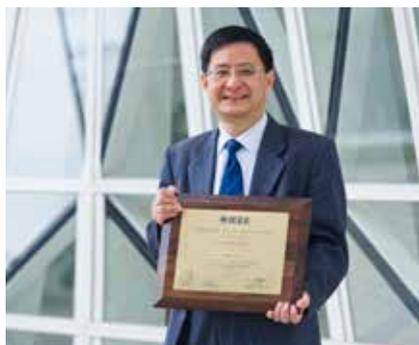
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 - 62nd in 'The World's Most Innovative Universities' by Reuter
 - 171st in '2016 QS World University Rankings'
 - 300,000 Alumni
-

CityU scientist wins Norbert Wiener Award



Hong Kong – Professor Yan Hong, chair professor of computer engineering and dean of the College of Science and Engineering at City University of Hong Kong (CityU), has won the 2016 Norbert Wiener Award.

The award signals international acclaim for Professor Yan's contribution to pattern recognition, image processing, genomic data analysis and biomolecular modelling techniques, all of which are important in the fields of information technology and medical treatment.

Professor Yan is an expert in image recognition technologies and applications,

and he has extensive research on computational molecular and structural biology.

His team has studied biomolecular structures at the atomic level and devised a method for analysing the surface curvature of a biomolecule. The interactions between two biomolecules, such as two proteins, or a protein and a drug molecule, can be predicted using their algorithms. This process will help us understand the effect of certain drugs on a cancer cell.

Professor Yan has worked out computational methods for studying protein mutations and their effects on non-small cell lung cancer that is resistant to drugs. Using the method developed by Professor Yan's group, scientists can predict drug resistance levels and determine which drugs are the most effective for specific mutations. Medical doctors can use the results to plan the best treatment for a cancer patient.

"I feel that doing interdisciplinary research is rewarding," said Professor Yan, who believed the award was a recognition for his group's work and an encouragement for his team. "I was trained as an electrical engineer,

and I realise there is a lot to learn in mathematics, physics and molecular biology in order to work on molecular modelling."

He added that it was always a joy to gain broad knowledge and tackle major research problems in science and engineering. Through interdisciplinary research, he hoped his team could make contributions to society, such as helping to save the lives of cancer patients.

Currently, Professor Yan is working on a tensor computing project in collaboration with mathematicians, computer scientists and medical doctors. He believes that advances in tensor research can help us to solve difficult problems in image analysis and molecular modelling.

IEEE is the world's largest technical professional organisation dedicated to advancing technology for the benefit of humanity. The Norbert Wiener Award was established in 1980 by the IEEE

Novel research finding by National Taiwan University researchers

Taiwan – Daisy chains (DCs) are garlands, worn as bracelets and necklaces, made by threading the stem of one flower through a hole in the stem of another, and repeating. Hermaphroditic monomers featuring complementary macrocyclic (host) and linear (guest) units mimic the form of a daisy; they have always previously provided cyclic daisy chain dimers ([c2]DCs) as predominant products because of the entropic preference for small assemblies. With their ability to contract and extend in response to external stimuli, [c2]DCs have been at the forefront of the development of one-dimensional artificial molecular muscles and associated stimuli-responsive materials.

Although higher-order cyclic DCs ([cn] DCs, where n is the number of repeat units) should also function as artificial muscles that perform work in multiple dimensions on the molecular level, their synthesis has

remained highly challenging. Recently, a research team led by Professor Sheng-Hsien Chiu in the Department of Chemistry of National Taiwan University achieved the first successful exclusive assembly of [c4]DCs from simple hermaphroditic monomers [Nature Chemistry (DOI: 10.1038/nchem.2608)]. They also obtained the first ever solid state structures of molecular [c3]- and [c4]DCs.

The interlocked versions of these [c3]- and [c4] DCs exist in two possible states, characterised by the distances between the stoppering termini: "stretched" and "contracted," with the latter forming in the presence of Zn²⁺ ions as a chemical stimulus. The switching of the [c3]DC between its stretched and contracted triangular structures, both planar, occurs with a change in "size" (as measured by the distance between its termini) of approximately 23%. For the interlocked [c4] DC, the stretched and contracted states

have square and tetrahedral geometries, respectively; therefore, its switching events involve overall three-dimensional (3D) motion. The change in the distance between the termini (36%) and the change in the radius of the circumscribed sphere (18%) upon stretching and contracting the [c4]DC mimic the one-dimensional movement (by ca. 27%) of biological muscle.

The behaviour of these new interlocked structures opens up interesting prospects for molecular machines capable of performing mechanical work in multiple dimensions. For example, if the muscle-like motion of such a structure could be controlled selectively in one or more dimensions, it might be possible to develop smart (i.e., stimuli-responsive) materials capable of undergoing precise variations in size or shape in 3D space on a macroscopic level – that is, totally moldable materials that can be reversibly shaped at will.

Co-creating smart cities along with future citizens



India – NMIMS University's programme on smart cities was given the Order of Merit Award at the Business World Smart city conclave in New Delhi on the 21 December 2016. The award-winning Interdisciplinary course on Smart cities opened up vistas of innovative thinking among the students and they co-created innovative solutions in various aspects of *smart cities*.

Students from the School of Pharmacy, Business Management, Technology Management and Engineering, and Science came together to be a part of an exciting project titled "Create a city that you would like to live in..."

The objective of the course was to build a deep understanding of the smart City

concept and the technology that underpins it. The course is designed to help the students develop innovative concepts and prototypes for a sustainable smart city.

The methodology of the course included classroom learning, field visits, case studies, futuristic outcome and the design process.

The starting point for the students was to think about the various aspects of a smart city like smart design, smart utilities, smart housing, smart mobility and smart technology.

The student teams worked on ten sub-themes of smart city: mobility, healthcare, infrastructure, water, waste management, energy, internet and telecommunication,

security, surveillance and disaster management; and developed the key performance indicators in each of these areas.

To measure the KPIs a pilot study was done in the special town of Shirpur (in Maharashtra interiors), where a number of smart initiatives have already been taken in the past couple of years and provided a great window to the students to measure the effectiveness of the smart elements deployed in the town.

With Shirpur as the inspiration town, the students developed prototypes of innovative concepts like a 3 tier city based on the speed of movement, healthcare kiosks on the expressways, glow in dark roads.



Keeping the rise of superbugs in check



Bugs!

Hong Kong – Superbugs recurrently make the headlines and fear of this menacing threat appears justifiable. As pointed out by the World Health Organization, antimicrobial resistance (AMR) is an increasingly serious threat to global public health. The microorganisms' ability to develop resistance can be attributed to several factors, one of which is exposure to

pharmaceutical residues in the environment, mainly through disposed drugs. To explore the extent of this problem, Dr Chung Shan-shan, assistant professor at the Department of Biology of Hong Kong Baptist University, embarked on a multidisciplinary research in collaboration with Baylor University in USA.

The government-funded study which analysed waste water and landfill leachate in Hong Kong found that the seven antibiotics commonly consumed by the local populace were found in concentrations that have an impact on the eco-system. Among them, ciprofloxacin (CIP) deserves the greatest attention. The level of CIP in landfill leachate was up to 20 times higher than the predicted no effect concentration (PNEC) level for resistance selection in the summer samples, and even greater than 50 times higher in the winter samples. Alarming, its concentration in landfills that have

not been in operation for over 20 years also exceeded the PNEC levels, raising questions over the accepted assumption that antibiotics decompose over time.

Dr Chung aims to conduct further studies and use the findings to inform policy-making, such as the introduction of take-back schemes. By minimising the amount of pharmaceutical residue that ends up in landfills or waste water, it is hoped that the damage inflicted on an already fragile and stressed environment can be stemmed. Otherwise, there will be a global need for more aggressive drugs, while the incidence of death from infection will continue to rise, putting pressure on governments around the world as social and healthcare costs increase.

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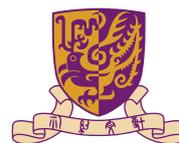
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How can you mend a broken heart? Acclaimed CUHK researcher did it with modified RNA molecules



Prof Kathy Lui

Hong Kong – The stakes could not be bigger – heart disease is the No. 1 killer globally, and also the leading non-infection cause of death for newborn babies. Professor Kathy Lui hopes to soon obtain permission to begin human trials to introduce adapted molecules into the body that will induce heart regeneration by stimulating blood vessel formation.

The ground-breaking work of Lui, an assistant professor in the Department of Chemical Pathology at CUHK, saw her recently win the Croucher Innovation Award 2017 from the Croucher Foundation, recognising “distinguished accomplishment in the international scientific community.” That provides her with a war chest of HKD 5

million (US\$640,000) over a total of five years to combat conditions of the heart.

Her key breakthrough is to discover that ribonucleic acid, or RNA, molecules act as the messenger causing the body to create vascular endothelial growth factor, or VEGF. That is a protein that helps create blood vessels to help build the heart or repair it after injury.

Her work began at Oxford University using mouse stem cells, then progressed to using human stem cells at Harvard Medical School, during her postdoctoral work. Their use mimics the development of the human heart, but is incredibly demanding.

“These cells are terrible: you have to feed them every day from Monday through Sunday, and they always eat before I do,” Lui says. “You don’t have much rest.”

Investigation into how stem cells progress helped Lui identify the progenitor cells that act as “grandparents” to the cells that turn into blood vessels or the heart muscles. But stem cells cannot be introduced into humans because the body’s immune system will reject them.

Lui has patented her method of making heart cells from puroprotein stem cells. She has also identified how to modify RNA to help it

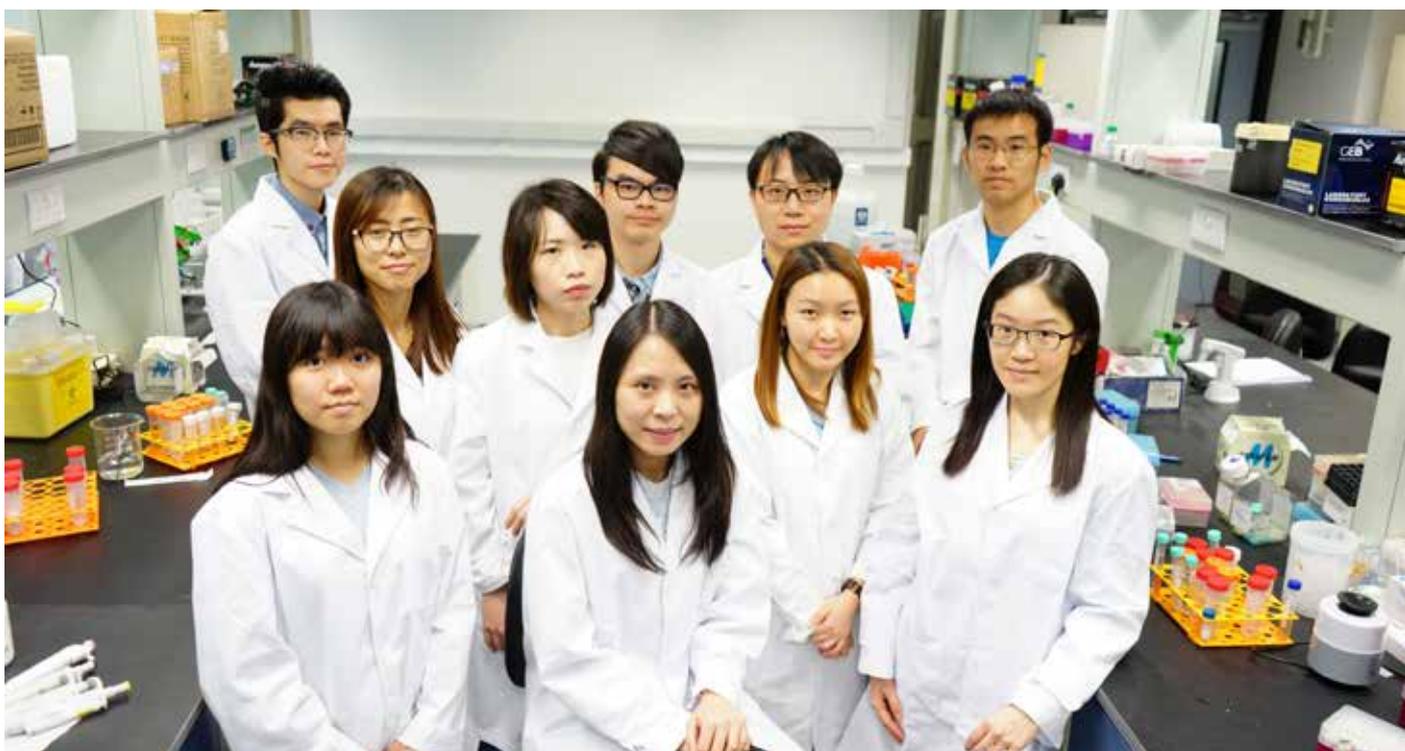
deliver increased amounts of VEGF, leading to a second patent, and a third covers the method to induce immune tolerance to the introduced and modified RNA.

She has now applied as of July 2016 to conduct clinical trials of introducing modified RNA into humans in conjunction with the drug maker AstraZeneca. “I am very confident that it can help patients,” Lui says. “This is a role for a scientist to find something to move from the trenches to the bedside.”

She hopes to use the money from the Croucher award to deepen her work on heart disease. Her aim is to help address the malformation of hearts in babies whose mothers contracted maternal diabetes. About 25% of babies that die shortly after birth from causes other than infection do so because of congenital heart conditions.

Little is known about the mechanism causing such babies to develop heart problems. The mother’s hormones undergo significant changes during pregnancy, and it is likely that such modifications create heart problems.

That has become her next mystery to tackle. “We only observe this, and we do not understand why,” Lui says.



Prof Kathy Lui and team

University in Russia first to introduce computational computer code for Airbus



Airbus Family Flight - A320, A330, A350, XWB, A380 Echelon

Russian Federation – For over a decade, Peter the Great Saint Petersburg Polytechnic University and Airbus have been collaborating on the development and deployment of ASRP (assembly simulation of riveting process) software complex.

ASRP is a specific and exceptional software solution with a great deal of complexity. It is said to be the only computer code developed by the university that is officially deployed in Airbus. From now on this mathematical solution is allocated into the company’s technological chain and is being used.

Expediting airframe assembly process is one of the most important tasks for Airbus due to a limited time for aircraft assembly and an impressive backlog for most popular models. Being a partner, the Polytech University in Saint Petersburg has been working on simulation of the airframe assembly process and optimisation of the assembly technology for years.

The main challenge for simulation of the assembly process was solving the contact problem for determination of deformed stress state of the assembly exerted by the forces generated by fastening elements. The standard commercial FEM codes have not been of high value so far due to complexity of the issue and a large number of unknowns.

A team of experts from Saint Petersburg Polytech University started working on this project; and the special mathematical model combining dimension reduction with the use of the state-of-the-art optimisation algorithms was developed and implemented in the computer code.

Having been fully tested by Airbus, ASRP now has the TRL6 grade, which means it is recommended for internal use by the company. Abbreviation TRL stands for technology readiness level and it comes from NASA. Experts from St. Petersburg Polytech University were the first in Russia to obtain TRL 6 in Airbus.

International research consortium launched at Lingnan University



Hong Kong – To provide a platform for international research on higher education, policy and governance with particular focus on the Asia-Pacific region and Asia-Europe comparison, an Inter-university Research Consortium for Higher Education was launched at Lingnan University, Hong Kong, on 31 October 2016.

The consortium was co-launched by Lingnan University together with University College London (UCL) Institute of Education’s Centre for Global Higher Education in the UK

and the Asia Pacific Higher Education Research Partnership (APHERP) in the US, and supported by University of Bath’s International Centre for Higher Education Management, King’s College London’s Department of International Development, and Bath Spa University’s Global Academy of Liberal Arts in the UK.

“The Consortium will bring together great minds for higher education, policy and governance research, the findings of which would inform international debates and policy making,” said Prof Leonard K Cheng, president of Lingnan University.

Other missions of the consortium include, inter alia, offering postgraduate studies programmes and PhD student exchange as well as establishing a stronger learning community for students from partnering institutions.

The launch of the consortium is the latest advancement of Lingnan University in enhancing international learning and research collaboration. A new master’s programme in international higher education and management is being developed by Lingnan University in collaboration with University of Hawaii and The University of Nottingham Ningbo China with the support of the consortium’s research team. As one of the collaboration initiatives, Lingnan and APHERP also co-hosted the international symposium “Gender and the Changing Face of Higher Education in Asia Pacific” on 29 October on Lingnan’s campus.



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India – Contamination of water by toxic heavy metals, dyes, pesticides, herbicides and other xenobiotic through the discharge of industrial wastewater is a worldwide environmental problem. This toxic water adversely affects plant life, and thus an entire ecosystem can be destroyed.

Reverse osmosis system, precipitation followed by coagulation, and membrane filtration are of limited use due to high cost and energy demands. Activated carbon produced by carbonising organic materials is the most widely used adsorbent for toxicants; but, the high cost of the activation process limits its use.

Manav Rachna University at its Department of Chemistry started working on the

principles of green chemistry to address this problem. Initially, a Manav Rachna Campus Chapter of Green Chemistry Network Centre (GCNC) was established and inaugurated by Dr Avtar Matharu, University of York, UK. To promote green chemistry initiatives, the university also conducted an international conference Green Initiatives in Science and Technology as well as the international workshop Chemistry for Tomorrow's World.

A team of students started working on the concept of bio-adsorbent, a green chemistry principle. It was observed that the university generates approximately 450–500 waste tea bags per day, which adds to the solid waste per capita of the country. Tea waste is an oxygen demanding pollutant and takes a long time for biodegradation. The generation of bio waste also produces economic loss due to the high cost of transportation to disposal areas and also generates ecological and sanitary problems.

Tea waste can be a cost-effective adsorbent. Waste tea bags used as adsorbent become saturated, then incinerated. The resulting ash

obtained is not a pollutant, rather it could be also used as an adsorbent.

The students' various studies show that waste tea can be used as an adsorbent material for the removal of dyes from waste water and toxic elements. To increase the efficacy of tea waste it is treated with various chemicals in order to increase surface area and porosity. The same has been confirmed by SEM images and porosity results. The surface modifications have also been confirmed by ATR-IR and elemental modifications have been confirmed by ICP-MS analysis.

Furthermore, tea waste can also be used as a feedstock material for the generation of various phytochemicals. The team is continually working to "minimise solvent and energy". The traditional methods for the extraction involve the use of huge quantities of solvents and heating for several hours. But the team is developing a microwave-assisted extraction technique, which is as effective in extraction but in less time using less amount of solvent.

RANEPA holds first Digital Summit forum of IT-technologies for business



Russian Federation – On 23 November, the Russian Presidential Academy of National Economy and Public Administration (RANEPA) hosted the first Russian forum of IT-technologies for business, Digital Summit, which showcased the best projects by Russian developers of IT solutions for the business and public administration management. Deputy minister of communications and mass media, Alexei Sokolov, and chairman of the State Duma Committee on Information Policy, Leonid Levin, attended the event. This year's contest involved hundreds of software developers, including major IT market players and student teams presenting their startups.

The Digital Summit forum brought together the best Russian developers of IT solutions aimed at improving the efficiency of business management and public administration. Leading industry

experts gathered to discuss import substitution in the IT sector; particular attention was paid to the prospects and results of digitalisation of governance in Russia.

"Russian experts presented their most successful IT solutions for Russian managers, officials and business leaders, and we will award the Digital Summit Prize to the best projects; the first national prize for IT development will be awarded in a variety of categories," said Larisa Katysheva who moderated the plenary session of the forum. "This forum is for those who want to live in an efficient state, work for efficient companies and be effective managers," she added.

The organisers of the forum included RANEPA, Institute of Internet Development, and the Digital Summit company.

IBS Hyderabad faculty tops the Case Centre's bestselling authors list

India – Getting ahead of more than 8,000 case authors from across the world, Prof Debapratim Purkayastha from IBS Hyderabad had the rare distinction of being the top bestselling case author in The Case Center's list of Best Selling Authors for 2015–16, during which 19,000 copies of his cases were sold.

Mr Vivek Gupta, and Mr Sanjib Dutta from IBS Center for Management Research bagged the 3rd position and the 35th position, respectively in the coveted list that included renowned case writers from internationally reputed B-schools, such as Harvard Business School, IMD, INSEAD, Darden, London Business School, and Stanford Graduate School of Business. The Case Centre chooses the 40 bestselling case authors from more than 8,000 registered case writers. Calling it an extraordinary achievement, the Case Centre in a release said: "Making our top 40 is an amazing achievement. Our top bestselling case author for 2015–16 is Debapratim Purkayastha."

IBS Case Research Center, a center of excellence at IBS Hyderabad, has developed more than 5,500 case studies on management. These internationally benchmarked cases are used by more than 870 business schools in 75 countries across the world.



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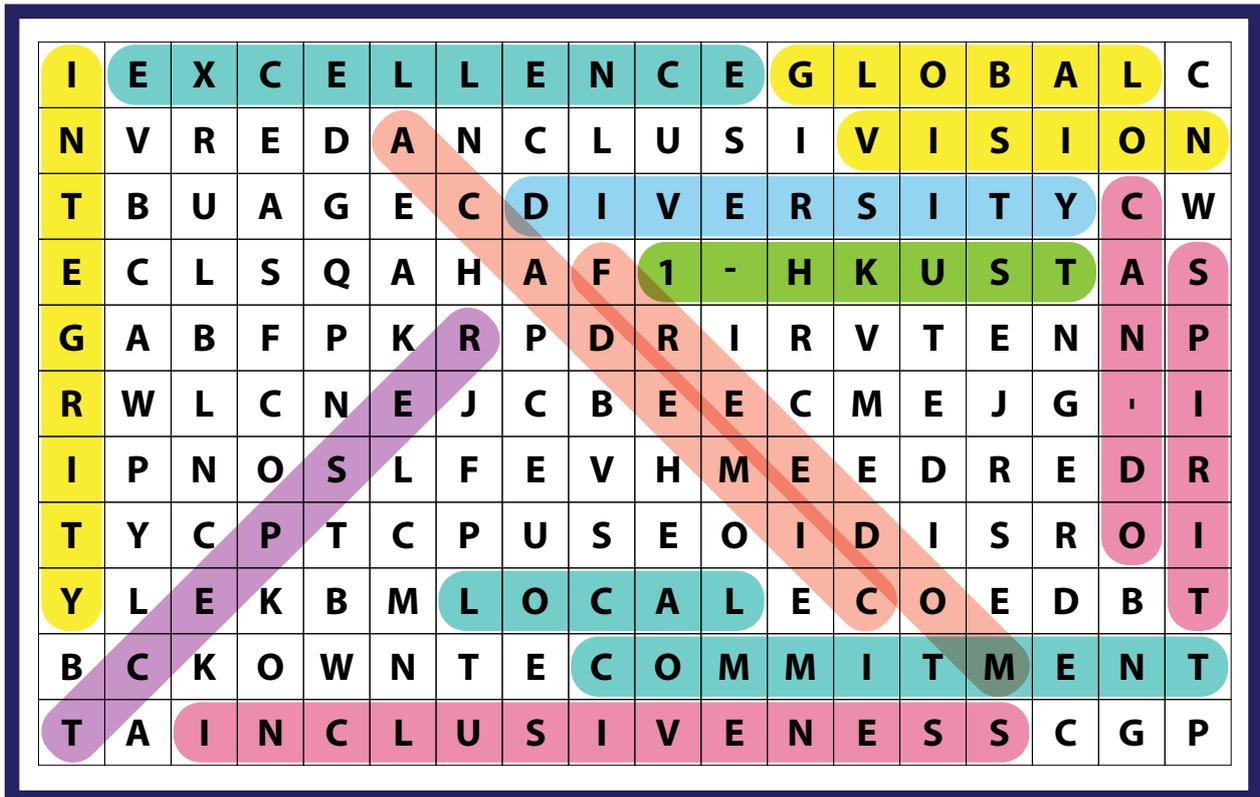
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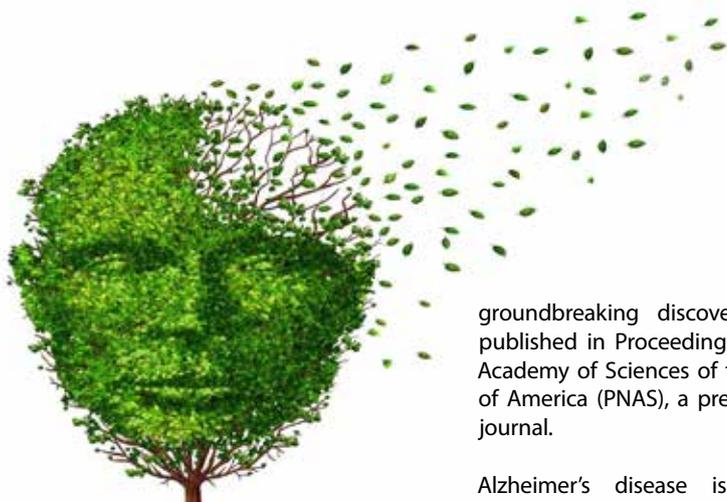


The Hong Kong University of Science and Technology (HKUST) is driven by a set of unique core values which represent the University's spirit and future aspirations. These values guide our institutional development, shape our distinctive culture and make us who we are today - a world-class international research university.

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*as of October 2016

HKUST unveils new therapeutic strategy for Alzheimer's disease



Hong Kong – A research team led by Prof Nancy Ip, dean of science, director of the State Key Laboratory of Molecular Neuroscience and The Morningside Professor of Life Science at the Hong Kong University of Science and Technology (HKUST), has successfully discovered a novel molecular target for Alzheimer's disease (AD), unveiling a potentially new therapy for the disease.

The team recently discovered that aberrant activation of the protein EphA4 is involved in the pathology of AD, and identified a naturally occurring compound from a traditional Chinese medicine herb that can block the activity of EphA4. These

groundbreaking discoveries have been published in *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, a prestigious scientific journal.

Alzheimer's disease is a progressive, debilitating and degenerative brain disease. Patients suffer from memory loss, impaired reasoning and judgment, and reduced locomotion abilities. AD mainly affects individuals over the age of 65, and is one of the possible leading causes of mortality in the elderly. The increasing number of AD patients will create an enormous social and economic burden on families and societies. It is also an emerging public health problem that poses a huge public resource burden.

There are no effective early diagnostic tools or treatments for AD as the pathophysiology of the disease is still unclear. However, research has confirmed that patients are afflicted with AD long before they have symptoms of memory loss or cognitive

decline. Thus, not only are therapeutic interventions urgently required, but they also need to be implemented in the early stages of the disease in order to be effective. And beta-amyloid (A β) is believed to be the main causative agent responsible for the cognitive impairment observed in patients.

Prof Ip and the research team discovered that A β can cause the aberrant activation of the protein EphA4 which triggers a signaling pathway that results in cognitive impairment. They demonstrated that EphA4 is the key player in the pathogenesis of AD. The team then explored the potential of manipulating this pathway as a possible therapeutic intervention. Molecular docking analysis, undertaken in collaboration with Prof Xuhui Huang in the Department of Chemistry, resulted in the identification of a naturally occurring compound from a traditional Chinese medicine database. This small molecule can rescue the synaptic impairment that underlies cognitive impairment as well as reduces AD pathology in animal models, thus demonstrating a potentially new clinical intervention to treat the disease.

This project is generously supported by the Innovation and Technology Commission, Hong Kong Research Grants Council and the SH Ho Foundation.

Korean research team develops delicate cellular-level scale

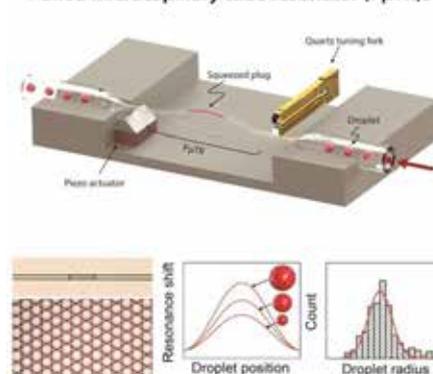
South Korea – A research team led by Professor Lee Jung-chul at the Department of Mechanical Engineering, Sogang University has developed a "glass capillary resonator", which is a delicate scale that can measure mass of a single cell or a micro particle living inside the solution. Glass capillary is made up of thin pipe, itself made of glass. Resonator is an equipment or system that induces a phenomenon to vibrate with structure with external force on natural frequency.

Glass capillary resonator developed by the research team shows an outstanding degree of accuracy similar to the level of MEMS Sensor with just general process without semiconducting process. MEMS Sensor is a sensor that measures force, vibration,

temperature, weight and so on through micromachining similar to the micro level. The new resonator is a solution to complex operation, overhead costs and expensive manufacturing facilities. Professor Lee Jung-chul said: "We developed a glass capillary resonator that can precisely measure the weight of single cell or fine micro particle as the size of a millionth of a particle. Due to an inexpensive and simple production method, it is expected to widely spread to not just in life science research but also in overall industry."

This research was carried out with support from Ministry of Science and ICT Basic Research Project (individual research), and as a result, published in *Scientific Reports*, which is an international academic journal.

Pulled microcapillary tube resonator (P μ TR)s



Mimetic diagram that measures oil droplet by using pulled microcapillary tube resonator

Fashioned for success



Tetsuya Mizutani & Nur Syahira

Malaysia – Nur Syahira Khairuddin won the audience over at Malaysia Fashion Week (MFW) 2016 with the infused heritage charm from combining the richness of traditional Malay songket with the contemporary feel of pastel shades. Naming it M'dern, she debuted the ready-to-wear collection at MFW 2016 under the Management and Science University (MSU) MODAWORLD brand. Joining her with his own collection treasuKURA was world-renowned Japanese fashion designer Tetsuya Mizutani, who is also a visiting professor at MSU.

The MFW runway show followed on the heels of Nur Syahira's success at the prestigious Mercedes Benz Stylo Asia Fashion Award 2015. She shares that distinction of being in the MSU winners' league with fellow student designers Ungku Nur Anna Alysa Majid and Tengku Zarith Sofea Tengku Nizan, who both won the Most Promising category at the 7th Malaysia Footwear Design Competition in 2014.

Fashion design at MSU is offered as a programme of honours degree (with

marketing) and diploma, and receives the backing of MODAWORLD. A support system encouraging fashion entrepreneurship, MODAWORLD advises and assists in the business side of fashion design, in matters relating to retail, wholesale, export, and production. Carrying the brand all the way through, MODAWORLD will also be the fashion label on every future design output of MSU students.

With industry-relevant curricula, industry-standard facilities, frequent competitive exposures, and a host of globally engaged programmes accompanying the MSU MODAWORLD initiative, every opportunity for the fashion design students of Management and Science University (MSU) has been fashioned for success.



Taipei Tech students join MIT in showcasing first autopilot plug-in electric vehicle



Taipei Tech students and MIT research team at the 2016 Microsoft IoT Expo

Taiwan – The first autopilot plug-in electric vehicle (PEV) developed by MIT Media Lab was displayed at the 2016 Microsoft IoT Expo on 17 October 2016. In the future, people can reserve one of these eco-friendly vehicles at a nearby spot to

travel in the city. Interestingly, passengers can even use smart card for current Metro system to pay for car rental rate.

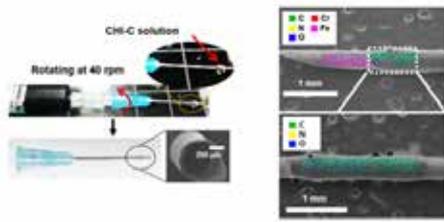
Two of the MIT research team members are current students at Taipei Tech – Hong-Yi

Liang, a computer science and information engineering master's student, and Chang-Chi Zhang from the Department of Electrical Engineering.

Liang and Zhang had previously worked in a same project (unmanned vehicles) back in Taiwan. Last June, they were invited by MIT Media Lab to be part of this project and design PEV's communication system. Liang was in charge of developing the software programme. Zhang handled software and the hardware integration.

Chang-Chi Zhang noted that PEV uses AI, camera, and Lidar to analyse the surrounding and detect distance. It also uploads these data to cloud and calculates the best path according to traffic. Speaking of this trip to MIT, he said this was his very first time travelling aboard. With MIT research team, he participated in an unexpected exhibition in Andorra.

Bloodless injection needle made with mussel



South Korea – A recently developed technology has laid a foundation for addressing the issue of bleeding in medical situations by taking advantage of the characteristics of living organisms in the natural ecosystem.

The research team led by Prof Lee Haeshin of the Department of Chemistry at KAIST has successfully developed a needle that causes no blood, thanks to the biomedical material mimicking the adhesive function of mussels.

In general, a number of medical treatments are provided through syringes, followed by hemostasis of the affected part for a few minutes. Whereas most healthy people can effectively stop their blood within three minutes, it is often difficult or impossible to

stop blood of patients suffering from cancer, diabetes, and hemophilia as well as patients taking aspirin for a long period during lengthy hospitalization.

Consequently, the styptic material must be firmly coated onto the surface of needles before injection and, after injection, it must be attached to the inside walls of blood vessels or to the skin for the purposes of hemostasis. The styptic materials that have been used have weak mechanical properties and therefore cannot bear the frictional force resulting from injection.

The research team observed that mussels use byssuses (a bundle of scleroprotein fiber found in fish and shellfish and adhere to rocks on the coast to withstand the rough sea waves. The team imitated the structure of mussel byssus and employed the catecholamine ingredient in byssus to finally develop a needle with a film having styptic functionality.

Once contacting blood, as the researchers explain, the film instantly changes into the form of a hydrogel with high moisture content, resulting in hemostasis. When such

adhesiveness is combined with medical technology, the film can produce an outstanding level of adhesiveness within the human body, approximately 70% of which is water.

“The new technology will help patients with a blood coagulation disorder, as it can bring a significant effect for all vein and muscle injections as well as effective functions for hemostasis models,” explained Prof Lee Haeshin. “I anticipate seeing more new technologies to be developed, through combination with a range of invasive medical devices including catheters and biopsy needles.”

The research results were published in the online edition of *Nature Materials* on 3 October 2016.



Prof Lee Haeshin

Completely undergraduate-run project reaching to orbit



India – During early 2011, a handful of young engineering students from Manipal Institute of Technology, a constituent institute of Manipal University, joined together and dreamt of building a student nanosatellite at the institute and launching it to orbit around earth. The dream came true in 2012 when highest governing body of the university was convinced by the same team with a presentation, and consented to sponsor the project with a budget of INR 10 million (approx. US\$160,000) – unprecedented for the university.

The team interacted with scientists from Indian Space Research Organization (ISRO), Vikram Sarabhai Space Centre (VSSC), Trivandrum and Space Application centre (SAC) Ahmedabad, and designed a 2kg shoebox sized satellite, Parikshit, which will orbit at 7.5 km/s, 800 kilometres above the earth. One of its payloads is terrestrial thermal imaging to study urban heat islands, oceans and clouds. The other, termed “ingenious” by ISRO is an experiment to deorbit the satellite at the end of its mission, thus ensuring that it doesn’t contribute to

space junk. It was this mechanism, called DragEN, designed by Saber Astronautics, that was tested on board the NASA zero gravity flight.

After the satisfactory preliminary design review, ISRO signed an MOU in July 2014 with Manipal University consenting to launch the satellite in one of their missions as a piggy bag and extend the technical support for building and testing the satellite.

At present about four batches of B.Tech graduates have worked rigorously on the project. Their sacrifice, hard work and commitment have now taken this project to the stage of qualification model testing. After successful completion of this phase, the team will be presenting comprehensive design review, and submit the flight model which will be launched by ISRO, most likely during this year.

The completely undergraduate student run project, with members from a range of fields including civil and biomedical, has produced 60 research papers. The complexity of the project makes it the most unique among any student satellite project under ISRO to date.



HUFS invites world-renowned scholars to come and engage in lively discourse on the humanities

QS Subject Focus Summit 2017
Literature, Language & Culture

July 5-7, 2017
HUFS Seoul Campus, South Korea

World's first fibre-optic railway monitoring ensures safe ride for millions of commuters

Hong Kong – The Hong Kong Polytechnic University (PolyU) is the first in the world to install fibre optic sensors in in-service railway trains to continuously monitor the tracks on which the trains run, in addition to applying the university's optical fibre sensing network on tracks for monitoring trains. Winning the third prize of the Berthold Leibinger Innovationspreis 2014 in Germany, this double monitoring approach is the most effective mode of maintenance for two of the critical components of a railway – tracks and trains.

In Hong Kong, 5.5 million daily commuters on the Mass Transit Railway benefit from this novel railway monitoring system developed by PolyU that helps ensure safety and reliability of train ride. Rail operators around the world, including those in the Chinese mainland and Singapore, have

also adopted this monitoring technology in their networks. So in fact, millions of passengers worldwide are benefitting from this innovation every day.

In the past few years, this technology has been successfully adopted in China's Beijing-Shanghai high-speed rail line. And recently, PolyU has collaborated with SMRT of Singapore to install six groups of sensors on the tracks and in running trains of its East West Line and North South Line, the two busiest lines in the metro network of Singapore.

Prof Tam Hwa-Yaw, PolyU chair professor of photonics and head of Department of Electrical Engineering, said, "We are proud to have exported this optical fibre sensing network to provide unprecedented health monitoring for the mission-critical

components in metro lines overseas. This PolyU technology will help enhance the performance of metro systems through an advanced predictive monitoring and maintenance regime, which is now the best practice in the railway industry and a global trend."

Under this collaboration, PolyU will help enhance the performance of Singapore's metro system through real-time analysis, staff training in operating the system and provision of maintenance and technical support. Compared with the prevailing means of regular check-ups for tracks after the close of traffic, the railway monitoring system provides continuous in-service monitoring that enhances service reliability through quick identification and rectification of defects.

Change makers in the making



Stanford team along with MITS students

India – Madanapalle Institute of Technology and Science (MITS), Andhra Pradesh, has carved a niche in the international platform. Stanford University's The Hasso Plattner Institute of Design (d.school), in partnership with Google, has launched an international programme to empower and transform the students to be change makers.

As a part of the global programme online tests were conducted and 169 fellows were selected across the world from 49 prestigious universities. In India, 20 students from eight colleges were in the selections; from Andhra Pradesh 13 students and among them six outstanding students from MITS have been shortlisted.

University Innovation Fellows Program (UIF) is a global leading movement, first time stepped in India, to promote the critical learning of the students to address global challenges. Stanford University at Silicon Valley training programme's vital objective is to develop an entrepreneurial mindset, to enhance the problem-solving skills and to sensitise the fellows to provide a positive impact on their own campus ecosystems. Initially, a six-week online training

programme from Stanford mentors and leaders in academia and industry prepared them to complete their training successfully at Silicon City USA.

The MITS UIF (University Innovation Fellows Program) team will attend Silicon Valley Annual Meetup from 9 to 13 March 2017. The training includes topics related to movement building, innovation spaces, design of learning experiences, and new models to bring changes in the higher education and to empower institutional ecosystems. This Meetup will bring together all the fellows trained in Fall 2016 and Spring 2017.

The Hasso Plattner Institute of Design brings together students and faculty from radically different backgrounds to develop their creative confidence and potential as innovators by tackling real-world challenges. The University Innovation Fellows Program is a partnership between Stanford University, Google and Andhra Pradesh State Skill Development Corporation (APSSDC) to bring opportunities to higher education institutions in India to help students and faculty enhance the innovation and entrepreneurship ecosystems of their institutions.

Sathyabama University's first successful student satellite



India – Sathyabama University has launched its first successful student satellite, "Sathyabamasat". Weighing 1.5 kilogrammes, the satellite was one of the 19 co-passenger satellites carried by PSLV-C34.

Launched by the Indian Space Research Organisation from Satish Dhawan Space Centre SHAR, Sathyabamasat will monitor the concentration of greenhouse gases, present in the atmosphere, which contribute to global warming.

A team comprising of faculty members and students were involved in the design and development of the nanosatellite for a period of six years. Scientists from ISRO provided technical assistance and guidance for the design, development and launch of the satellite.

Developing a nanosatellite weighing 1.5 kilogrammes with the indigenous technology is indeed a challenge. The team has worked dedicatedly, investing a great deal of time, effort and money to realise the objective of developing the university's own satellite.

Malaysian university's act of mercy to stop deadly disease



The community boards put up in various parts of Sierra Leone were created and produced in Malaysia by Limkokwing University of Creative Technology.

Malaysia – On the website of BBC updating the world on the disease spreading in East Africa in August 2014 were billboards with messages to STOP EBOLA, underscoring the determination of a people to overcome the calamity.

The campaign to STOP EBOLA was developed in Malaysia. The materials were designed and produced by Limkokwing University of Creative Technology and air-freighted to Sierra Leone in August when the disease was starting to spread.

“At that time it had become a matter of life and death for people to know how they must stay clean to stop the spread of the disease. There was no other way,” said University President Tan Sri Dato’ Sri Paduka Limkokwing, who was in direct contact with the Sierra Leone government.

“Our primary focus was on saving lives. The message was strong and meant to give hope to people that they can overcome the disease. We wanted instill a positive mindset among the people and I was sure it would go a long way to help them beat the disease,” he added.

In a personal message to Tan Sri Limkokwing, Sierra Leone Minister of Education, Science and Technology Dr Minkailu Bah said he was overwhelmed by the empathy and love the university had for the people of Sierra Leone. “The President Dr Ernest Bai Koroma was moved by your offer of support and has wholeheartedly approved the National Action Plan for Ebola Eradication,” he added.

It was a turning point in the history of Sierra Leone as over 3,000 youths signed up to join the country’s first foreign university

offering them new opportunities to get ahead in life. This is a country fast tracking its development after a decade of civil unrest. The arrival of Limkokwing University of Creative Technology of Malaysia, was part of a government attempt to correct the imbalance.

However, with the rampant spread of the disease and for the sake of the safety of staff, the university campus was forced to close till the situation improved. Fortunately, the campus reopened in September 2016 with 1,200 students beginning a new phase in their lives. With these 1,200 youths Limkokwing University begins to set the foundation that Sierra Leone needs to begin its economic recovery.

“Our expansion into overseas markets, especially the developing world, is to partner with governments to create the human capital they need to widen and deepen their economic sectors,” said Tan Sri Limkokwing whose university is now established in 10 countries, some of which have been in troubled countries like Yemen, Sierra Leone and Lesotho.

Turning that frown upside down with creative coding



A portrait of Benjamin Franklin manipulated by Smilevector. Image: Smithsonian National Portrait Gallery

New Zealand – A Victoria University of Wellington researcher is using an internet robot to investigate what it means to be creative in an increasingly computerised world.

Tom White, senior lecturer in Victoria’s School of Design, has created Smilevector – a bot that examines images of people, then adds or removes smiles to their faces. “It has examined hundreds of thousands of faces to learn the difference between

images, by finding relations and reapplying them,” says Mr White.

“When the computer finds an image it looks to identify if the person is smiling or not. If there isn’t a smile, it adds one, but if there is a smile then it takes it away. It represents these changes as an animation, which moves parts of the face around, including crinkling and widening the eyes. The bot can be used as a form of puppetry,” he adds.

“These systems are domain independent, meaning you can do it with anything – from manipulating images of faces to shoes to chairs. It’s really fun and interesting to work in this space. There are lots of ideas to play around with.”

The creation of the bot was sparked by Mr White’s research into creative intelligence. “Machine learning and artificial intelligence are starting to have implications for people in creative industries. Some of these implications have to do with the computer’s

capabilities, like completing mundane tasks so that people can complete higher level tasks,” says Mr White.

“I’m interested in exploring what these systems are capable of doing but also how it changes what we think of as being creative is in the first place. Once you have a system that can automate processes, is that still a creative act? If you can make something a completely push of the button operation, does its meaning change?”

Mr White says people have traditionally used creative tools by giving commands. “However, I think we’re moving toward more of a collaboration with computers – where there is an intelligent system that’s making suggestions and helping steer the process. A lot will happen in this space in the next five to ten years, and now is the right time to progress.

LIMKOKWING

Most globally celebrated



An inspiring mentor empowering students from across the world.

From the time he was a young man in his 20s, Tan Sri Dato' Sri Paduka Limkokwing has been admired for his creative genius and there are over 200 international awards that testify to the gamut of skills he excels in. They include entrepreneurship, film & video, publishing, advertising, innovation leadership and web creativity among many others. But the awards provide merely a glimpse of the huge respect he enjoys across the world.



Entrusted by His Majesty King Mswati III to ensure the success of the 36th SADC Summit hosted by Swaziland.

Building global goodwill, promoting Malaysian interests

It is not by chance that Prime Minister Dato' Sri Mohd Najib Tun Abdul Razak appointed him as his *Special Envoy to the Southern African Development Community (SADC)*. Not many people are aware of the enormous contribution he has been making to transform African nations, for instance. They do not know that when he arrives he is greeted right there at the airport tarmac and whisked away in official cars to meet with government heads.



Empowering more African youths to become entrepreneurs using new technology to pioneer hi-tech enterprises.

The World Confederation of Businesses named him *Father of Innovation in Africa* recognising the change he is bringing into Africa through empowered youths, the driving force of a new Africa. He has also been recognised with the *Leadership in Education for Africa's Transformation*.

His Royal Highness King Letsie III of the Kingdom of Lesotho has bestowed upon him, the title *Commander of the Most Meritorious Order of Mohlomi*—the only Malaysian to be recognized with a title that was also awarded to the former President Clinton of USA.



The only Malaysian honoured with the Grand Companion of OR Tambo award by South African President Jacob Zuma.

President Jacob Zuma of South Africa recognised him, the only Malaysian, with the *Grand Companion of OR Tambo* award for his work with former President Nelson Mandela in the fight against Apartheid.



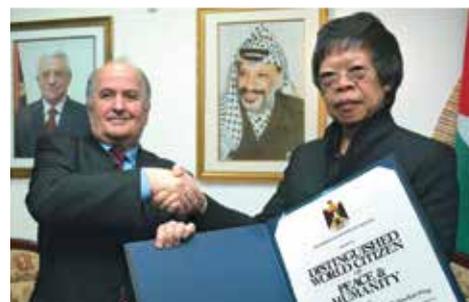
Awarded Royal Ambassador for Creativity and Innovation as well as Royal Ambassador for Malaysian Education by HRH Sultan Pahang.

He has been appointed *Malaysia's Royal Ambassador of Creativity & Innovation* as well as *Goodwill Ambassador*.

Trailblazing across Asia, Europe, and USA

The government of the Republic of Tajikistan made him its *Honorary Consul*. Forbes Magazine of the US named him one of *Asia's 48 Heroes of Philanthropy*. The Ramadhan Foundation of the UK and the Perdana Peace Foundation recognised him with an award for *International Contribution to Humanity and Philanthropy*.

His Excellency Abdelaziz Abughoush, Ambassador Extraordinary and Plenipotentiary of the Embassy of the State of Palestine recognised him with the award of *Distinguished World Citizen of Peace & Humanity*. For his efforts in promoting world peace he was awarded *World Peace Ambassador* by the Sun Yat Sen Centre for Peace and Education in 2005.



Receiving the Distinguished World Citizen of Peace & Humanity award from H.E. Abdelaziz Abughoush, the Palestinian Ambassador to Malaysia.

Seo Kyeong University of South Korea recognised him as *Asia's Most Accomplished Educationist* and China in 2010 awarded him *World Creative Master*.



Receiving Asia's Most Accomplished Educationist award from Professor Dr Kim Bum Joon, Executive Vice President of SeoKyeong University of South Korea

The Oxford Centre for Leadership in UK awarded him for *Worldwide Leadership in Innovative Education* while the London Graduate School of Management recognised him as *Asia's Most Creative Thinker and Personality*. Most recently he was appointed the first *TVET UK International President* recognising the huge contribution he has been making to promote industry-skewed education as the most practical form of education that prepares youths for tomorrow's workplace.

New drug that is 4,000 times more efficient on blood clots!



Vladimir Vinogradov, head of the Solution Chemistry of Advanced Materials and Technologies Laboratory at ITMO University

Russian Federation – Blood vessels blockage associated critical conditions are one of the world's primary health concerns. The main goal of emergency assistance in such cases is to effectively implement thrombolysis, i.e. to destroy the clot quickly. Scientists from ITMO University, in cooperation with Mariinsky Hospital doctors (Saint Petersburg), have developed a new magnetically controlled drug that conquers blood clots up to 4,000 times more effectively. The new material will also help reducing drug dosage, thus avoiding numerous side effects.

In emergency of thrombosis the clot must be destroyed within a very short time period. After 3–4 hours tissues will die. Thrombolysis in advanced countries is carried out effectively in only 15% of the cases; in Russia,

this rate is just 2%! Others carry the risk of disability or death. And even if the patient is lucky enough to undergo the procedure, he or she will suffer numerous complications from the thrombolytic drug.

Regular drugs cannot target the clot directly and spread all over the blood circulatory system. The body begins to block the foreign enzyme thus diminishing its activity. Therefore, drugs are injected in loading doses hoping that at least a small part reaches the target on time. "Now we are using a sledge-hammer to crack a nut," says Ivan Dudanov, head of the regional cardiovascular centre of Mariinsky Hospital. "However, we've invented a way to deliver the drug directly to the target, considerably reduce the dosage and focus the effect on the clot."

The new composite material represents a cellular magnetite matrix containing urokinase molecules used as a thrombolytic agent. The composite can be easily localised near the clot by using an external magnetic field.

The material structure also protects the enzymes from various natural blood inhibitors likely to deactivate thrombolytic medications. Andrey Drozdov, the first author of the study and researcher at the

Solution Chemistry of Advanced Materials and Technologies Laboratory at ITMO University, explains: "Usually in order to achieve a prolonged effect for such drugs the enzyme is covered with a polymeric matrix. Then it is gradually released from the matrix, and eventually it loses activity. Our approach demonstrates that enzymes do not lose therapeutic qualities over extended time periods and even after repeated use. The rate at which the new drug can dissolve the clot excels unprotected enzymes by nearly 4,000 times."

The material is potentially safe as its components have been approved for intravenous injection. In future, drugs based on the new composite could also be used for thrombosis prevention. Even in small amounts the enzyme can gently clean vessels and stay active for a very long time until its natural excretion by liver.

"We prepared a thrombolytic colloid and tested it on artificial blood clots obtained from plasma and human blood, and real thrombus extracted from patients. Now we are getting ready for pre-clinical studies," concludes Vladimir Vinogradov, head of the Solution Chemistry of Advanced Materials and Technologies Laboratory.

Sri Lankan team wins accolades at Formula Student 2016



SHARK's vehicle

Sri Lanka – In its first ever Formula Student competition, Team SHARK of the Department of Mechanical Engineering of the University of Moratuwa, Sri Lanka, marked its entry in style by winning three outstanding awards at IMechE - Formula Student 2016.

The competition, which was held from 14–17 July at the Silverstone Circuit, UK, featured the participation of over 100 teams from leading universities across the globe. Team SHARK won awards for the Best Newcomer – Class 1 and Dedication to Formula Student. Induwara Munasinghe from Team SHARK was awarded the Best Individual Driver Award for his outstanding skills.

Formula Student is one of the most established motorsport competitions for university undergraduates across the globe and is backed by renowned industrial and professional engineers in the motorsport industry. Teams of students worldwide were tasked with designing and building a single-seater racing car in order to compete in static and dynamic events. The competition is conducted under two categories: Classes 1 and 2.

Class 2 focuses on design presentations and costing while the more challenging Class 1 requires teams to build a formula car in addition to other design presentations. Each team car must undergo rigorous testing procedures, both static and dynamic. Design, cost and sustainability, business presentation judging, technical and safety scrutineering, tilt test and brake and noise test were carried out under static events while dynamic events included skid pad, fuel economy, acceleration, and sprint and endurance tests.

Team SHARK's journey into Formula Student

began in 2013 as they began the project to design and manufacture a single seat open-wheel drive car, under the supervision and guidance from faculty members of Department of Mechanical Engineering. In 2016, the department collaborated with DIMO PLC and provided SHARK with financial assistance, fabrication facilities and testing facilities which made their dream a reality.



Team SHARK with their vehicle

Locally Rooted, Globally Respected

UGM, the oldest and most comprehensive university in Indonesia, is a home to students from all over Indonesia and the world to learn in a transdisciplinary and intercultural ambience.

Since its inauguration in 1949, UGM has purported to be a center for nurturing global leaders through student community services-community empowerment learning (SCS-CEL), with 7,000 students being mobilized annually to work with an array of communities.

UGM also yearns to be a powerhouse of creativity and innovation in supporting the national development. In fact, its research findings and outcomes encompass high-caliber medical devices and medicines (e.g., bone graft, nasopharyngeal carcinoma diagnosis kit, VP-shunt, etc.), renewable energy, agricultural produces, IT-smart systems, landslide early warning systems, and other products which have been renowned nationally and internationally in the market, substantiating the University as a trailblazer in state-of-the-art innovation.



UGM

UNIVERSITAS GADJAH MADA

Malaysian Prime Minister officiates centre for sustainable development



Prime Minister of Malaysia Dato' Sri Najib Tun Razak officiating the launch of the Jeffrey Sachs Center on Sustainable Development at Sunway University in Kuala Lumpur, flanked by Professor Jeffrey Sachs, Sunway Group founder and chairman, and Jeffrey Cheah Foundation founding trustee, Tan Sri Dr Jeffrey Cheah (middle), science advisor to prime minister of Malaysia, Professor Tan Sri Zakri (first from right) and Sunway University vice chancellor Professor Graeme Wilkinson (first from left)

Malaysia – Intended to mobilise comprehensive collaboration among Southeast Asian nations for sustainable development, the Jeffrey Sachs Center on Sustainable Development was officially launched on 9 December 2016 by Dato' Sri Najib Tun Haji Abdul Razak, the prime minister of Malaysia.

A catalytic move by Malaysia to spearhead the achievement of the United Nations' 17 sustainable development goals (SDGs), the centre is the result of a gift of US\$10 million from Malaysia's largest education-focused

social enterprise – the Jeffrey Cheah Foundation.

Taking a leading role in advancing the SDG goals, the Jeffrey Sachs Center on Sustainable Development in Sunway University is to develop linkages with leading universities and think tanks around the world and in Malaysia. Moving Malaysia and Asia forward in the area of sustainable development will see the Centre work on curating the world's best curriculum, academic and executive programmes on sustainable development.

The Prime Minister hailed the establishment of Jeffrey Sachs Center which reinforces the government's commitment to achieving the sustainable development goals and commended its leading role in supporting the government in advancing these goals.

Very much aware that the SDG goals are not the sole responsibility of governments alone, founding trustee of the Jeffrey Cheah Foundation and founding chancellor of Sunway University, Tan Sri Dr Jeffrey Cheah, is of the opinion that all sectors of society, including the private sector, academia, civil society groups and, of course, every single individual should play a role in sustainable development.

Professor Jeffrey Sachs, chairman of the centre said the centre will concentrate on four main capacities: teaching programmes to help the new rising generation of Malaysians and students from all over the region and the world to become leaders of sustainable development; research to understand practical challenges and find real solutions; working with the Malaysian government to bring people here, and to help neighbouring governments to plan and see the pathways to sustainability and take regionally co-operative steps for success.

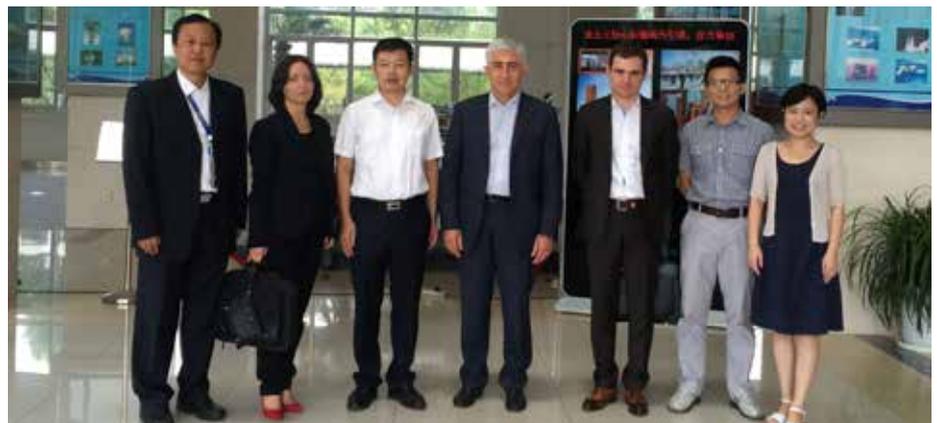
Top Russian and Chinese universities to establish joint aerospace school

Russian Federation – In November 2016, Moscow Aviation Institute started a joint programme with The Commercial Aircraft Corporation of China, Ltd. (COMAC) – a project that is expected to solve several problems at once.

First of all, Russian and Chinese engineers often face problems because of the difference in conceptual apparatus, experience and engineering traditions while working together. A series of theoretical courses on several priority areas have been devised in this programme, which include *integrated avionics* and *design of structures made of composite materials for the civil planes*.

Test results in the end of the first week showed that Chinese engineers had a better understanding of their Russian colleagues.

The joint programme is not limited to refresher courses – Moscow Aviation Institute and Shanghai Jiao Tong University are going to establish joint aerospace school. Both Chinese and Russian students will study on a single plan in the same group; for example, two years in Shanghai Jiao Tong University,



MAI delegation in Shanghai Jiao Tong University

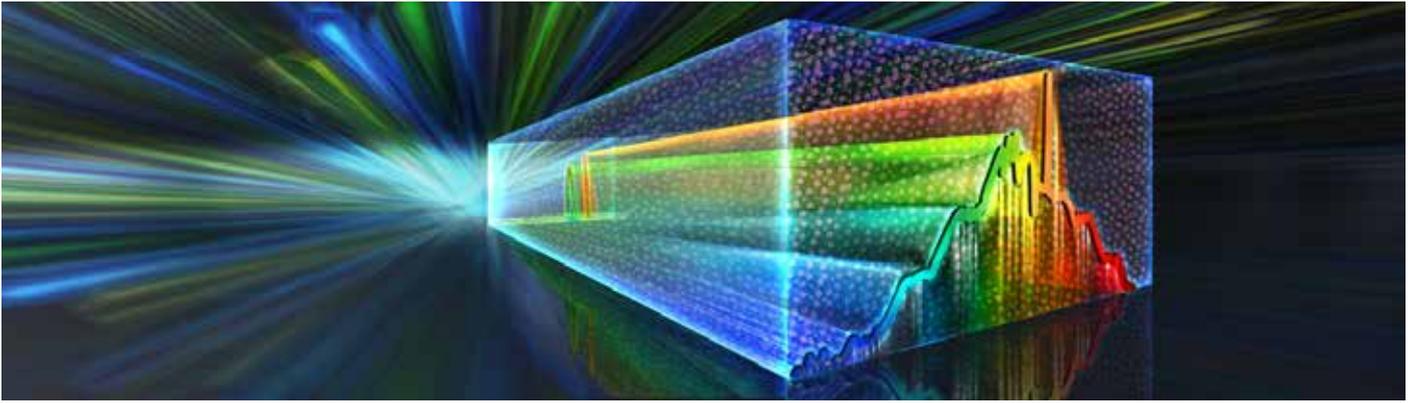
then two years in MAI. This way engineers will learn to work effectively in joint projects where both engineering and management tasks need to be accomplished. This approach is the basis of the "University 3.0" model.

"We are not talking about specialists in the aerospace field only – school are going to teach engineers an extensive set of competencies. Our focus is the production of professionals with broad vision and in-

depth knowledge in a number of areas, such as product lifecycle management and structural design of composite materials, says Daria Vorobieva, deputy head of the Airplane Design Department.

The joint project will start in September 2017. In March the papers will be signed and academic plan will be approved.

Chip-scale optical amplifier that is 17,000 times stronger!



Optical signals propagating through a USRN waveguide undergo 42.5dB of optical parametric amplification.

Singapore – Accessing a website through one's computer sends a request to the data centre that hosts the data by way of a vast fibre optic network. A bottleneck at the last mile is what limits the achievable data access speeds today. Within the transmission link, optical losses lead to signal degradation and loss of information. Consequently, periodic amplification of light using optical amplifiers is needed.

Researchers at the Singapore University of Technology and Design (SUTD), A*STAR Data Storage Institute and Massachusetts Institute of Technology have created an optical amplifier, which can amplify light by as high as 17,000 times, on a CMOS-based chip-scale device.

To give a sense of the scale, a conventional optical parametric amplifier costs several hundred thousand dollars, and occupies an entire optical table (around 3 metres by 4 metres), while the newly developed amplifier is 200 times smaller than the width of a human hair, and costs a fraction of the former. The amplifier, designed to be used for telecommunications-based data transmission, for example in a transceiver

or fibre optic network, could leverage its efficiency, size and cost advantage for applications in low-cost broadband spectroscopy, precision manufacturing and hyperspectral imaging.

The researchers managed to achieve much higher gain than in other CMOS predecessors, through device engineering at the nanoscale, such that the nonlinearity of the device is maximised, while still maintaining a sufficiently large bandgap to eliminate two-photon absorption at the telecommunications wavelength. The strength of the optical nonlinearity is important for the achievable absolute gain. Two-photon absorption causes light to be absorbed, causing the optical gain to be degraded.

“Our amplifier was created on a proprietary platform called ultra-silicon-rich nitride, which is composed of seven parts silicon, three parts nitrogen. Together with photonic device engineering, we designed our platform to possess a sufficiently large bandgap to eliminate two-photon absorption at the telecommunications wavelength, while still maintaining a

large nonlinearity needed for high gain amplification. We believe this is one of the highest gains demonstrated at the telecommunications wavelength to date on a CMOS chip,” said SUTD Assistant Professor Dawn Tan, who led the development of the amplifier.

The device's efficiency is also revealed through cascaded four wave mixing, which is a higher order mixing of the amplified and converted photons. This phenomenon also allows the amplifier to operate as a tunable broadband light source, enabling cheaper and more efficient spectroscopic sensing and molecular fingerprinting than what is currently available.

“For the telecommunications domain which we are targeting, the developed amplifier is another piece in the technology toolkit, and could provide an efficient way to provide regenerative amplification in short to long range communications,” said Prof Tan.

Details of the research appeared in *Nature Communications* on 4 January 2017.

Indian student among world's top 10 faces of civil engineering

India – A final year student of civil engineering at Maharishi Markandeshwar University has been selected as one of ASCE's Top 10 New Faces of Civil Engineering-College Edition for 2017.

Coming from a place with utmost historical importance, Ambala, India, Aniket Yadav is a student leader at his university, and has participated in prominent civil engineering festivals in India, including the Indian Institute of Technology, Bombay's annual technical festival, Aakaar '16, and is working as a

major organiser of his home university's civil engineering festival SwaroopMM '17.

He has contributed to a number of major engineering projects, including the Chenab Bridge Project Undertaking, known as the world's tallest steel arch rail bridge project to date. He contributed to this prestigious project by testing and stressing of DYWIDAG anchor bars. He guided the installation of the DYWIDAG bars and rock bolts and worked on subsurface drainage for installation of weep holes.

ASCE's New Faces of Civil Engineering recognition programmes highlight the next generation of civil engineering leaders. By showcasing young, diverse, talented engineers the programme shows that engineering is an exciting profession open to everyone.

Ten honourees are selected by ASCE in each of two divisions: collegiate and professional. One honouree per division will be selected as the “New Face of Civil Engineering” by DiscoverE (formerly the National Engineers Week Foundation).

Our target is not simply to create a timescale, but to use it to understand climate change

Research on the annually laminated sediments at Lake Suigetsu has received worldwide attention. The finely laminated layers, referred to as "varves", are annually resolving environmental records, much like tree rings. With a high level of precision, the ages of the fine layers, the varves, were ratified in 2012 as the largest component of the "IntCal" which is the international consensus timescale for dating geological and archaeological relics.

The data of Prof. Nakagawa's research team cover the last 70,000 years. The analyses of pollen and plankton fossils, sediment matrix, volcanic ash and air-born dust from the Eurasian continent enable us to reconstruct past climate changes in annual resolution.

Now we are working on the sedimentary layers with researchers in the world to reconstruct changes of climate and geomagnetic field as well as the history of natural hazards.

Our future lies in our past.

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New method that allows more precise hurricane forecasting

Russian Federation – Hurricanes are giant atmospheric vortices with air pressure, subsiding to the centre, and a very high speed of the air flow, one of the most dangerous phenomena on the planet. The quantity of energy, released by a hurricane of average intensity for one hour, is equal to a nuclear explosion of about 30 Mt. All this power moves above the ocean and, finally, collapses on the beach. Only in the USA, according to NASA, about 100 million people live in the hurricane risk zone.

Taking into account devastating consequences of hurricanes, it is hard to overestimate the necessity of their precise forecasting. But despite a “great leap” in modelling of the hurricane motion path, made in the past years, the possibilities to forecast hurricane power have only slightly improved. Scientists from the National Research Nuclear University MEPhI (Russia) hope to improve the situation.

Changes in the atmosphere precede the hurricane appearance and development. Following these changes, it is possible to trace the cyclone and predict processes, happening in it.

“Hurricane muon hodoscope is able to observe and analyse on a real-time basis modulations of the flow of secondary cosmic rays on the earth’s surface, provoked by different processes in heliosphere, magnetosphere and the earth’s atmosphere. The uniqueness of our hodoscope is that in the real-time mode it allows to reconstruct each muon’s track and get muonographies (by analogy with radiography).

“Muons are elementary particles, which appear in the earth’s atmosphere after a series of transformations of particles, coming from the space. The analysis of muonographies gives a possibility to conduct quick monitoring of a large zone of heliosphere and control the state of the atmosphere up to the altitudes of 15–20 kilometres above the sea level,” says Professor Igor Yashin of MEPhI scientific educational centre.

According to the scientist, the new hodoscope guarantees a very high precision of forecasts. To watch the atmosphere under the territory of Russia, which is 17.1 million square kilometres, four hodoscopes of the “Hurricane” kind will be required. Considering the fact that hurricanes appear not above

the whole ocean surface, and the majority of tropical cyclones is formed between 10 and 30 degrees of latitude of both semispheres, the quantity of hodoscopes, necessary to control such territory, is not big.

“Muon diagnostics, developed in MEPhI, gives a possibility to research any processes, modelling the flow of cosmic rays, in the earth’s atmosphere and magnetosphere. But to study such processes it is necessary to create a network of similar, adjustable muon hodoscopes. Such hodoscopes have been developed in MEPhI,” Igor Yashin says.

Previously, muon detectors had been used for the X-raying of Egyptian pyramids and the monitoring of volcanic activities. The newly developed hodoscope is also able to forecast the development of potentially dangerous phenomena in the heliosphere, provoked by the sun’s activity, magnetic storms, and other natural disasters.

Clinicians’ expectations of benefits and harms of treatments often inaccurate!



Prof Tammy Hoffmann

Australia – Health professionals rarely correctly estimated the benefits and harms of medical treatments and tests - accurate for only 11% of the benefits and 13% of the harms examined – potentially contributing to an increasing level of intervention overuse, a new study by Bond University has found.

The research, published on 10 January 2017 in one of the world’s most influential medical journals, JAMA Internal Medicine, is believed to be the first systematic review of clinicians’ expectations of the benefits and harms of medical interventions.

The study found that clinicians more often underestimated, rather than overestimated, the harms – and overestimated, rather than underestimated, the benefits – of interventions.

Conducted by Professor Tammy Hoffmann and Professor Chris Del Mar from Bond University’s Centre for Research in Evidence-Based Practice (CREBP), the research reviewed 48 studies involving a total of 13,011 clinicians, mostly doctors, that examined expectations of treatments, medical imaging, and diagnostic and screening tests.

Professor Hoffmann said the inaccuracies occurred across a wide range of treatments, tests and screening tests.

“We know from our earlier research that patients also have inaccurate expectations, and most people think that interventions

will help more and harm less than they actually do,” she said.

“The reality is, if both clinicians and patients are bringing inaccurate expectations into the consultation, the potential for misguided, ill-informed decisions is very high. Both patients and clinicians need ready access to high-quality, unbiased, easy-to-understand information about the benefits and harms of treatments and tests to see this improve in the future.”

Professor Chris Del Mar said keeping up-to-date with the latest research was difficult for many clinicians. “The amount of new research being published every day is staggering and keeping abreast of it all and working out what is quality research and what is not is a challenge,” he said.

“It is very important we find ways of helping to get accurate and up-to-date information about interventions’ benefits and harms into the conversations that clinicians and patients have.”



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The most extensive scientific cruise in Malaysian history



Launching of the National Scientific Cruise Expedition

Malaysia – In 2016, UMT set a major achievement when Institute of Oceanography (INOS) was appointed to lead the most extensive scientific cruise in Malaysia History. In 45 days the National Scientific Cruise Expedition (EPSK 16) covered almost the entire South China Sea within Malaysian territory, which contains more than 100 scientific

stations. It also managed to attract more than 70 scientists from 20 different agencies within Malaysia, as part of the integrated effort under the Blue Ocean Strategy model initiated by the Malaysia government.

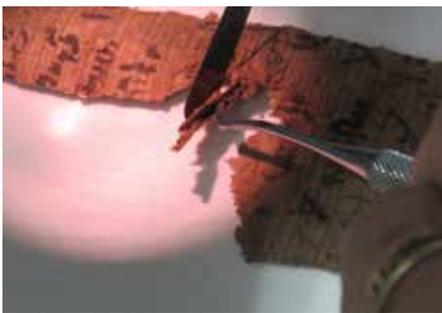
EPSK 16 was an elaborate effort between the Ministry of Science, Technology and Innovation (MOSTI), Universiti Malaysia Terengganu (UMT) and Royal Malaysian Navy (NAVY) to enhance the understanding of Malaysian waters, especially in the South China Sea. MOSTI pledged MYR 1 million funding with in kind contributions from UMT and NAVY. The main objectives were to conduct full coverage oceanographic survey of Malaysia waters, with the aim of providing a high-resolution and a coherent inventory on the present condition of productivity, pollution and impact of climate change on the ocean ecosystem of Malaysia seas.

During the expedition, RV Discovery, a scientific vessel owned by UMT, was the main platform for data collection and INOS was a central research laboratory.



Scientists in action

Trusting students with big things



Tokai Papyrus restoration unfolding an ancient fold

Japan – A bulk of ancient Egyptian and Near Eastern archaeological collection was donated to Tokai University in 2010. Among them, there were about 400 fragments of papyri written in ancient demotic script. Many of them were too small to restore, but about 50 of them were worth deciphering for publication. However, those papyri had many damages which needed to be restored before bringing in philologists to crack codes.

Hence the project Restoration, Conservation and Decipherment of Papyri in the Tokai University Collection with an International Collaboration (abbreviated as the Papyrus Project) started in 2012 under the direction of Professors Hojo and Yamahana, School of Letters, Tokai University. Prof Joseph Manning, Yale University, USA, and Prof Richard Jasnow, Johns Hopkins University, USA, and their doctoral students joined this project.

The first problem faced by the team was that there was no professional papyrus conservator in Japan. Inviting the professional from abroad was the common sense solution, but the team decided to let Tokai University students have this rare opportunity of get their hands on ancient papyri, learn how to handle them, and restore them by their own hands.

Twenty-five students eagerly signed up for the project, and 12 of them were selected to take a one-month lesson by an experienced papyrus conservator Ms Myriam Krutzsch from Germany. She taught them the essentials about papyrus and skills needed for restoration and conservation, such as cleaning, unfolding, flattening and framing. Students absorbed her teachings quickly, and a year later, some students went to take



Tokai student being taught by Ms Krutzsch



Tokai Book of the Dead

further internships on papyrus restoration and conservation at the Papyrological Collection in the University of Michigan, USA, and the Neues Museum (Staatliche Museen zu Berlin), Germany. They returned to Tokai University, and worked together with philologists from USA, and their restoration works were published in Jasnow, et al, The Demotic and Hieratic Papyri in the Suzuki Collection of Tokai University, Japan, 2016.

The idea of letting students participate in the real world of conserving cultural heritage was a great success in terms of cultivating students' ambitions to draw their future plan. Now Tokai University has become a sole centre for papyrus restoration and conservation in Japan. The student conservators are working to pass their skills to younger generation.



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UI GREENMETRIC

UI GreenMetric World University Ranking has ranked universities worldwide according to six indicators: setting and infrastructure, energy and climate change, waste management, water, transportation, and education.

UI GreenMetric Ranking of World Universities was established in April 2010 in order to provide a profile for and way of comparing the commitment of universities towards going green and promoting sustainable operation.

*numbers of universities participated in the UI GreenMetric in 2016.



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UI GreenMetric goes global

Indonesia – In 2010, University of Indonesia initiated a global university ranking for universities' efforts toward global environmental and sustainability issues, called UI GreenMetric. With participants increasing every year, UI GreenMetric ranked 515 universities from 74 countries in 2016.



UI GreenMetric ranks campuses based on the campus environment, energy conservation and encounter climate change effort, waste management, eco-friendly transportation, education and research aspects. It has been accepted as a voluntary standard worldwide as found in many academic publications. Universities can participate

in UI GreenMetric by registering and submitting required documents from July to October. The result of the UI GreenMetric World University Ranking is released on December.

As a result of the 2nd International Workshop on UI GreenMetric 2016, UI GreenMetric Network Hub was initiated in 2016, to encourage the formation of a network hub of sustainable campuses. Many events have already been organised in various part of globe, such as Russia, Turkey, and Jordan. In September 2016, UI GreenMetric held a Workshop in RUDN University, Moscow, Russia, with 18 universities attending from Moscow and St. Petersburg. UI GreenMetric also conducted a one-day workshop on 3 October 2016 for Turkish universities, hosted by Bulent Ecevit University in Zonguldak, Turkey.

Two days later, on 5 October 2016, National Workshop on UI GreenMetric for Jordanian universities was held, which

was hosted by Jordan University of Science and Technology (JUST) at the city of Irbid, the second largest city in Jordan. This workshop aimed to introduce the UI GreenMetric, and was officially opened by the president of Jordan University of Science and Technology, Prof Omar Al-Jarrah, together with Prof RiriFitri Sari as the chairperson of UI GreenMetric

UI GreenMetric has become the trigger for considering environmental issues as part of the university development roadmap by higher education institutions.



Say goodbye to double surgery with magnesium implants



Timur Mukhametkaliev

Russian Federation – A PhD student from the Tomsk Polytechnic University (TPU) Institute of Physics and Technology is developing bioresorbable orthopaedic implants based on magnesium alloys. Such implants are capable of both substituting damaged bones and becoming the basis to cultivate the body's own bone tissue.

“A traditional method to treat fractures is the replacement of damaged bones with metal

implants made of stainless steel, titanium and its alloys. However, after the healing of the fracture a repeated surgery is required to remove the metal construction. In this regard, bioresorbable magnesium alloys which can be applied as soluble implants are pretty promising,” says the developer, Timur Mukhametkaliev.

Magnesium alloy implants can slowly dissolve in the human body and be replaced

with new bone formation. According to Timur Mukhametkaliev, magnesium was chosen due to its specific features: it is not toxic, is part of humane metabolism (the adult human body contains up to 40 grams of magnesium), and has mechanical properties similar to the human bone.

The only drawback of magnesium is its fast solubility in the body. The doctorate student solved this issue by covering the implants with bioactive hydroxyapatite protective coating. They are deposited on the magnesium surface in the modified RF-magnetron sputtering plasma chamber.

Timur Mukhametkaliev is developing magnesium implants under the leadership of the TPU Technology Center's Chief Roman Surmenev, backed by the Russian Science Foundation.

The polytechnicians have already published their results obtained in leading scientific journals in Russia and abroad. The fellows of the TPU Technology Center are the members of the Research Consortium on Novel Methods to Modify Surface Properties of Biodegradable Magnesium Alloys.



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Thai university receives global recognition from Apple

Thailand – University of the Thai Chamber of Commerce (UTCC) has been recognised as an Apple Distinguished School for Innovation, Leadership, and Educational Excellence 2015–2016.

The recognition was based on the university's accomplishment to engage students in an innovative and compelling environment that encourages students to enjoy studying both in and outside classroom. Since 2013, UTCC undergraduate students have accessed over 700 lessons, created by UTCC faculties, through iTunes U.

The first educational institution in ASEAN to receive the Apple Distinguished School, UTCC adopted iTunes U to leverage students' learning experience. The university is currently a regional training centre that has already offered training and consulting programmes for schools in Thailand.

Associate Professor Sauwanee Thairungroj, president of University of the Thai Chamber of Commerce, said "UTCC is well-known for its digital hybrid learning system; iTunes U is

one of the teaching tools that the university has chosen because the platform incredibly matches students' learning interests and lifestyles."



Malaysian eco-warrior reaches a new pinnacle



Tan Sri Dr Salleh Mohd Noor

Malaysia – UCSI University Council member Tan Sri Dr Salleh Mohd Noor is no stranger to summits. Having conquered Mt Kinabalu, Mt Tahan, Mt Ophir and more recently, the base camp of Mt Everest – at the age of 72! – Dr Salleh has gone where few would dare venture. Although age has dictated that

his mountain climbing days should cease, Dr Salleh reached a new pinnacle recently when he received the 2016 Merdeka Award for his unending contributions to conserve Malaysia's environment, forests and wildlife.

Receiving his trophy from Perak state ruler Sultan Nazrin Muizzuddin Shah, Dr Salleh was one of only four outstanding Malaysians who were selected to receive the coveted annual award that comes with a RM500,000 cash award.

Dr Salleh's environmental crusade began in 1977 when he joined the Forest Research Institute Malaysia (FRIM) – then known as Forest Research Institute Kepong before it became a statutory body – where he served as director-general till his retirement in 1995.

"It was a time when indiscriminate logging was rampant and while Malaysia made money from timber exports, we had to ensure ongoing operations would not jeopardise the ecosystem," he says. "I don't think I was the best friend of the timber conglomerates but some listened and did their part.

"Logging aside, Malaysia's forests had vast potential and FRIM championed forest-related research to the government to ensure

the ecosystem would not be taken for granted. I believed from day one that we could make an impact."

"This took some reconciling in the early days as I wanted to conserve the forest land that was being cleared in favour of palm oil plantations," muses Dr Salleh. "It was difficult and there were times when I was conflicted.

"That said, I knew how vital palm oil would be for Malaysia and I aligned my goals with the national agenda. I could still contribute by stressing things others often overlooked."

Embracing the dichotomous situation, Dr Salleh worked with palm oil companies to determine how plantations should be. Hilly forested areas should be left untouched and access points for wildlife could not be compromised.

His advocacy worked and Dr Salleh was widely regarded as an eco-warrior. He went on to champion turtle conservation in Terengganu and he influenced the Malaysian government's decision to ban sharks' fin soup at official functions.

Bird survival – progressive step towards environmental sustainability by VIT



Dr Irina Trubetskova from USA, who is a full time faculty member at VIT, is also helping the students to develop sustainability index for VIT taking into account all the variables related to sustainable living.

India – Sustainability of nature in the campus is one of the areas to which universities generally pay less attention. Considering the growing impact on environment, a team of eight students, who were passionate on the environment joined their hands with Prof V Sai Saraswathi, to form “Nature

Club” and work for various perspectives in conservation of the nature.

The first step the club has taken towards this realisation is the discovery of 78 bird species in the VIT lake ecosystem and on the campus, which includes residential and migrant birds. These birds maintain the ecological succession in and around the campus as seed dispersing agents; because seed germination capacity is at its best with the birds rather than any faunal biodiversity. The crucial link provided by the birds in maintaining the sustainability of the man-made ecosystem cannot be denied. Hence the club is exploring the unique contributions of these birds in the ecosystem. According to UN ecosystem assessment, birds are not just unique and colourful species, they are significant for any ecosystem. The insights gained through this exercise thrills the students.

University of Malaya’s scientist wins L’Oreal-UNESCO award

Malaysia – Established in 1998, the L’Oreal-UNESCO for Women in Science Fellowship was created specifically to recognise the contributions of women in science.

This year, Dr Reena Rajasuriar, a lecturer from the University of Malaya Medical Faculty, was recognised as one of the three women scientists in Malaysia whose research has made a difference. Dr Rajasuriar was given the award in recognition for her research on unlocking the code of immunological ageing process.

According to Dr Rajasuriar, her observations of the phenomenon of premature ageing in both HIV and cancer survivors led her to investigate whether both groups shared common defects in the immune system which contributed to this phenomenon.

Dr Rajasuriar’s research on identifying those factors that speed up the ageing process in both HIV patients and cancer survivors will be useful in helping these groups explore the issues of survivorship as well as the quality of life. In her work so far, the scientist is trying to identify which immunological pathways are affected when these groups experience premature ageing. In addition,



she is also exploring the factors which are likely to affect these pathways. Her research thus has important contributions on our understanding of how our immune system affects the process of ageing.

The L’Oreal-UNESCO award is one of the many accolades that this young scientist has achieved in her career. Although she is one of the youngest academics in the Department of Pharmacy, she has already been awarded the excellence award twice (in 2005 and 2014) by the University of Malaya. She was also the recipient of the prestigious King’s Scholarship in 2006, which gave her the opportunity to pursue her PhD in Immunology at Monash University.

New therapy to handle drug counselling

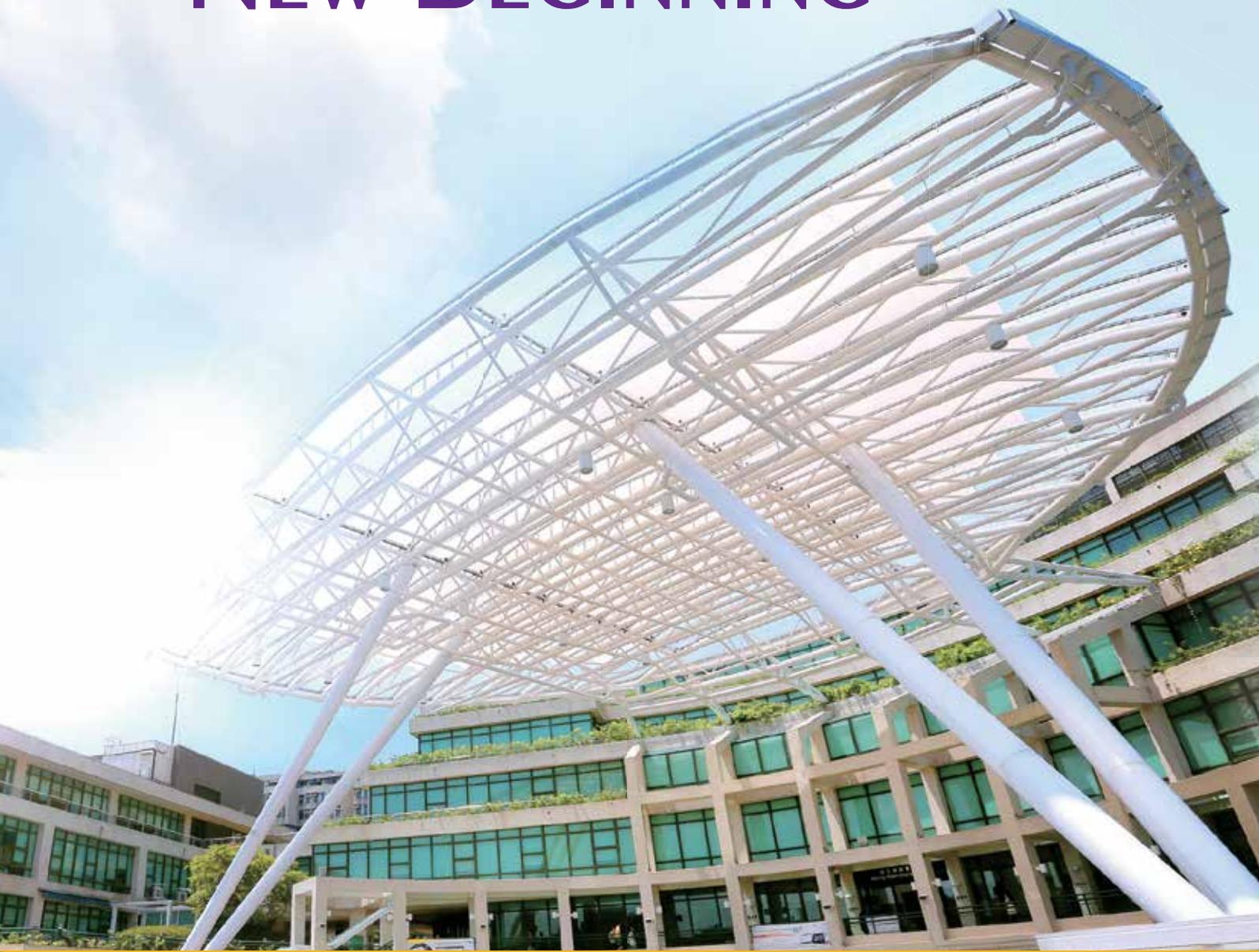
The Philippines – Dr Marina Reimslagh, a resource speaker from Belgium, during the multi-sector meeting held at the University of Santo Tomas (UST), introduced the psychological kinesiology or PSYCH-K therapy model as a new approach in handling drug counselling cases in the Philippines.

The PSYCH-K approach taps the person’s subconscious in eradicating the negative stressors related to the sensory signals received and felt by the individual, totally eliminating one’s lingering distress. To further understand this approach, Reimslagh conducted a sample case demonstration with the participation of Ms Mary Rachele Batanes from the University of the East.

Reimslagh also presented her book on the said approach titled “No Stress Today with PSYCH-K.” With good results and positive feedback from individuals who had undergone PSYCH-K, Reimslagh hopes to implement the approach in the Philippines to help with the current mental health issues in the society. With this in mind, an eight-day orientation and training has been scheduled for 27 February to 6 March 2017.

The multi-sector collaborative meeting involved the UST Counseling and Career Center (CCC), which hosted the meeting, the Natasha Goulbourn Foundation (NGF), and the Department of Health. The meeting aimed at orienting helping professionals on a new technique that can help address the pressing concern of the country on substance abuse. The meeting was held on 24 November 2016 at the Counseling and Career Center Annex at the Quadricentennial Pavilion and was attended by counsellors and mental health practitioners from the university. The officers of the Integrated Professional Counselors Association of the Philippines (IPCAP) and the Philippine Guidance and Counseling Association (PGCA)-Tarlac Chapter were also present.

NEW UNIVERSITY NEW BEGINNING



The Education University of Hong Kong (EdUHK) is the newest publicly funded university in Hong Kong with a primary focus on Education and related disciplines. EdUHK is ranked **12th in the World** and **2nd in Asia in Education** in the Quacquarelli Symonds World University Rankings by Subject 2016.





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UTM – Malaysia’s 5G innovation trailblazer



Yang Berhormat Dato' Seri Idris bin Jusoh, Malaysian minister of higher education, at the launch of IC5G; looking on are Yang Berbahagia Prof Datuk Ir Dr Wahid bin Omar (right), UTM vice chancellor, and Mr Sam Saba, president of Ericsson South East Asia and Oceania and chairman of Ericsson Malaysia, and Mr Todd Ashton, head of Ericsson Malaysia and Sri Lanka.

Malaysia – The very first 5G centre in Malaysia, a collaboration between Universiti Teknologi Malaysia and the telecommunications giant Ericsson, which has been also endorsed by the Malaysian Ministry of Higher Education, was launched in Kuala Lumpur on 16 December 2016.

The UTM-Ericsson Innovation Center for 5G, or IC5G (a play on the words I see 5G), is located in UTM's Kuala Lumpur campus, and features 5G innovations, a 5G research lab and a 5G learning space, which is expected to benefit around 2,000 students from institutions and industries in Malaysia over three years.

The opening of the centre follows the memorandum of understanding signed between Ericsson and UTM through its Wireless Communication Centre (WCC) in October 2015. Both parties have agreed to undertake activities that will facilitate research linkages, trade and information exchange in order to work on joint research projects, and to realise the impact of 5G on industries and society.

UTM is currently in the second phase of its Global Plan, which among others, aims to engage in strategic collaborative research programmes resulting in impactful outcomes. As one of Malaysia's research universities, UTM aspires to become an innovative, entrepreneurial and globally renowned education and research brand.

Perhaps one of the most important questions that can be asked is: what exactly

is 5G? To date, the exact definition remains to be determined and the boundaries of its application are yet to be discovered. Speed of network would of course be a prerequisite, with speeds that can eclipse existing 4G or LTE networks. However, 5G aims to go beyond that.

According to Prof Dr Tharek Abd Rahman, director of UTM's WCC, 5G aims to set the standard of communication that bypasses human to human or human to device interaction, but directly from device to device. "For example, when you arrive home, without you having to touch a button, your home automated system detects your presence, opens the garage door, brews a cup of tea, and puts on some soothing music. All without the need for human interaction."

Prof Tharek quotes further examples of 5G, where "in the field of medicine, imagine a heart surgeon in the US being able to operate on a patient in Malaysia in real time, where latency between both ends of the interaction is in the range of milliseconds."

5G is the foundation for realising the full potential of the networked Society, which will enable organisations to move into new markets and build new revenue streams with radically new business models and use cases, including internet of things (IoT) applications. The new capabilities of 5G span across several dimensions, including very high data rates, very low latency, ultra-high reliability, energy efficiency and extreme device densities.

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Researchers identify proteins controlling sleep



IIS building

Japan – Researchers at the International Institute for Integrative Sleep Medicine (IIS), University of Tsukuba, have identified the first two core genes that regulate sleep/wake, which will lead to uncover a network underlying sleep.

Sleep is an essential animal behaviour in vertebrates and invertebrates. Mammalian sleep is made up of tightly controlled cycles of rapid eye movement (REM) sleep and non-REM sleep. Recent studies have identified neural networks in different parts of the brain that switch between wakefulness, REM sleep and non-REM sleep. However, the molecular mechanism regulating these switches was totally unknown. By examining 8,000 mice carrying random mutations to isolate those with sleep/wake abnormalities (i.e. forward genetic screening), Masashi Yanagisawa, director/professor of IIS, and his colleagues have identified sleep phenotypes and mutated genes that revealed roles for two proteins in regulating sleep need and maintaining periods of REM sleep.

Previous work identified genes that control sleep in fruit flies carrying random mutations, but equivalent experiments in mice are technically more challenging because of the requirement for measures of brain activity in sleep/wake and the fact that multiple mechanisms are involved in sleep regulation. Observations of the mice identified a mutant pedigree with extended sleep time, named "Sleepy". This

pedigree was shown to carry a mutation in the *Sik3* gene, which encodes an enzyme SIK3 expressed in neurons of the brain that controls other proteins.

"We noticed that 'Sleepy' mutants showed an exaggerated response to sleep deprivation," first author Hiromasa Funato says. "Examining the brains of sleep-deprived mice revealed changes in the phosphorylation of amino acids within the SIK3 protein. These changes were disturbed by the *Sik3* mutation in Sleepy mice, which is why they have an increased sleep need."



IIS sleep scoring

A second sleep phenotype was identified with a shortened and unstable REM sleep period. "This mutant pedigree, named 'Dreamless', carries a mutation in the *Nalcn* gene, which encodes an ion channel thought to control neuronal excitability," co-author Chika Miyoshi says. "The dreamless mutation causes increased ion conductance through the channel and increased activity of REM-terminating neurons, which is compatible with REM sleep instability." Genes related to *Sik3* in flies and nematodes were also shown to be involved in regulating the amount of sleep-like behaviours in these animals, while a mutation in a *Nalcn*-related gene in flies was previously found to control a circadian change in neuronal excitability. These conserved roles in invertebrate genes show the importance of controlling sleep in all animals.

"We hope that the discovery of those key genes is just the beginning of our long journey into the black box of sleep regulation," Yanagisawa says. "It is amazing that we know almost nothing about the simple question of what is 'sleepiness' physically in our brain. We will start from those genes to tackle the great mystery."

IIS is one of nine institutions in the World Premier International Research Center Initiative (WPI) supported by the Ministry of Education, Culture, Sports, Science and Technology of Japan.

Going cashless at the bottom of the pyramid



The dignitaries inaugurating the event

India – On 8 November 2016, the Prime Minister of India, through a special broadcast announced that denominations of INR 500 and INR 1000 would be demonetised from the midnight. The announcement was a big shock since it came unannounced to the fastest growing economy in the world with a thriving cash economy. According to reports two-thirds of India’s GDP is cash economy and a majority of the business is run via cash with no transparency and accountability. The move was aimed at controlling black money, corruption and weeding out counterfeit currency notes from circulation.

Although in general people were appreciative of the decision in the best interest of the country, it was felt that if India were to be comfortable with cashless banking using digital means, the problems would not have been as serious as it was. Unlike developed nations, wherein 50 to 60 percent of transactions take place in cashless modes, in India not even 5% is through digital means. Further, the penetration of cashless banking in rural India, which is the real India, is pathetic.

A few professors of Nitte University, who have been advocating financial inclusion and digital banking, decided to adopt a nearby village in South India for introducing cashless banking. For the implementation of the project 154 student volunteers were recruited. These students were trained in popularising digital modes of payments to move toward the goal of cashless village or at least a less cash dependent village. Groups comprising of the student volunteers, faculty members, village leaders and local government representatives were formed. The programme was launched on 18 December 2016 at the village community hall, aiming to bring every family in the village under banking and also to introduce cashless banking channels to the villagers.

The volunteers went to each of the households in the village and opened bank accounts for those who did not have bank accounts, provided digital channels (debit/credit cards, mobile banking etc) to those who already had accounts and demonstrated the easy methods of using these digital channels. The village shopkeepers and traders were encouraged to initiate digital payments by installing POS machines. The team also demonstrated to the villagers the use of other channels that do not require internet and smartphones.

The voluntary services of the university staff and students have paid off. The problems caused by demonetisation were converted into an opportunity to go cashless. The success of the project has made the district administration to replicate the project in all the villages of the district, and make Dakshina Kannada District, the first district in the country to go cashless by 31 March 2017. If well implemented, this novel project can send a strong signal about India’s drive towards a transparent and corruption-free reformist stance. Nitte University is the first university to take up this cause as a part of its academic social responsibility.



Awareness programme in the village



Student volunteers train the villagers on the use of digital banking in their local languages

Indian students develop a completely automated cycle sharing system

India – The year 2016 for SRM University was an incredible confluence of brilliant engineering, reliable surveys, passionate ideas and realistic research and prototyping. Feynman Technology was born and there is now a team of 35 talented members working on domains ranging from hardware and software to public relations and design thinking. The solution that took shape was called “Pedal”, an automated cycle sharing system.

In search of an eco-friendly, sharable transport, the team targeted the ecosystem around them, SRM University, and worked on building a mode of transportation that would help students move around the campuses conveniently. Pedal is completely automated and can be monitored from an application. Simply approach a hub and swipe your smart card for a cycle to be unlocked. Push the cycle back into a hub closest to your destination to complete your ride. Billed by the minute, the system is of minimal costs and fulfils the need for a green and efficient system.

The implementation in SRM University is ongoing and is expected to be on ground in February of 2017. In addition, Feynman Technology has had the unique opportunity of collaborating with a platform called Digital Impact Square, which is a TCS Foundation Initiative for start-ups. Through this, Feynman Technology is working with the Municipal Corporation in Nasik to set up Pedal across the city for last mile connectivity. A feasibility study has already been conducted and discussions on the details of an implementation are ongoing.



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King of Sweden honours King Abdul-Aziz University scouts for tremendous volunteering work

Saudi Arabia – During his visit of the Scout Camp in Riyadh, the king of Sweden, His Excellency Carl XVI Gustaf, the honorary chairman of the World Scout Foundation, together with the minister of education and chairman of Saudi Arabian Boy Scouts Association, Dr Ahamad Ben Mohammed Al-Isaa, honoured King Abdul-Aziz University scouts with the shield of the highest number of hours of volunteer work within the Messengers of Peace Projects throughout 2016.

The director of scouts in the University Deanship, Mr Ahmad Alkhorami, said: "This honouring of the scouts constitutes a big incentive for all the participating students and is the result of continuous efforts in the field of volunteer work serving the community."

Over many years, the university scouts have recorded a significant presence through their participation in the Hajj season and other social services, achieving advanced positions as the students participated in many volunteer and social work activities. The dean of student affairs, Prof Dr Abdel

Moneim Bin Abdulsalam Hayani, also praised the great accomplishments fulfilled in the name of the King Abdul-Aziz University, which reflects the noticeable support and attention given to the scouts by the university rector, Prof Abdulrahman Bin Obaid Alyoubi, who thanked all the participating students and asked them to exert more effort.

On another delightful note for Saudi Arabia, Prince Khaled Al-Faisal Chair for Moderation has been converted to a research centre at King AbdulAziz University, with the aim of establishing a culture of moderation through scientific research and activities, awareness-raising initiatives and educational and academic lectures.

Under the auspices of Prof Abdul Rahman Alyoubi, the center kick-started its activities with a workshop entitled "the intellectual and research initiatives in the field of moderation," involving some distinguished faculty members and a number of experts and specialists from various disciplines to suggest activities and initiatives for the centre's plan of this year. In line with the center's objectives, different participants

put forth several ideas that fit with different age groups and can be implemented by the center within its forthcoming plan of action. As such, this centre is considered to be an extension of Prince Khaled Al-Faisal's Chair of Moderation, which produced numerous scientific papers, training courses and seminars in the field of moderation in the past five years.

Professor Alyoubi confirmed that the center is looking forward to achieving the vision of His Highness Prince Khalid Al-Faisal in consolidating the Saudi moderation approach and the dissemination of culture in society, standing for the same ethos that the first, the second, and the third Saudi states were founded upon. KAU rector also stressed the idea that one of the center's main objectives is combating extremism through the consolidation of the culture of moderation, especially in light of the worrying developments the region is witnessing, which require intensive studies and research to confront deviant thought and eliminate the chaos and destruction that the kingdom has efficiently fought throughout history.

Date palm rachis as a smart building material

Egypt – Prof Hamed Elmously, Prof Yasser Mansour and Eng Eman Atef, researchers at the Faculty of Engineering Ain Shams University, have unveiled a new method of utilising natural palm rachis in the construction of cheap, fast, light structures. This type of structure can help solve the issue of shrinking agricultural land at the Nile Valley due to massive constructions using non-biodegradable conventional building materials such as concrete and steel.

Palm rachis is the palm branch that

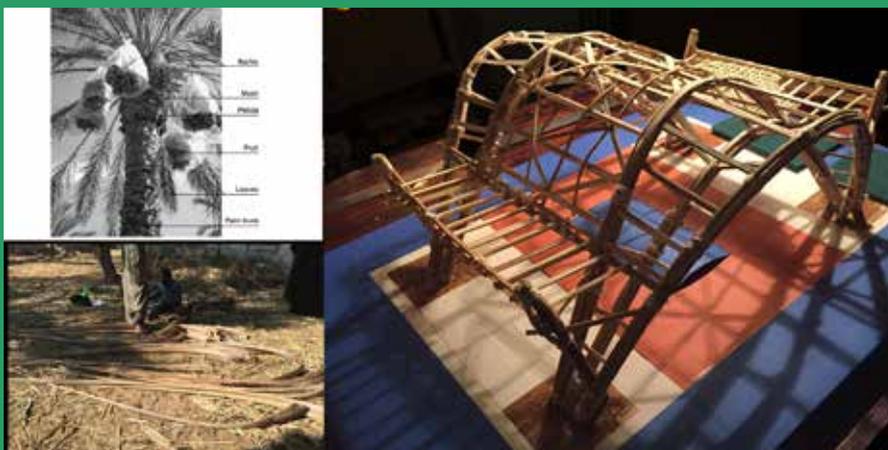
carries the heavy weight of the date clusters. Naturally, Nile Valley date palm rachis grows to around 5–7 metres long, which requires annual pruning to avoid catching fire. A female date palm in the Nile Valley produces 20–25 rachises annually, as one of the most abundant agricultural residues in Egypt. This qualifies palm rachis to be used in traditional sheathing in rural Egypt.

The arched space truss structure system was chosen to decrease the cross section of the bundles and to ensure having firm and stable structures. However, the main

challenge in the design of a space truss was the design of the connections. So, in order to decrease the complexity of the connections, the chords of the arched space truss were designed to be parabolic. A parabolic arch transforms all the internal forces into pure compression. If the arched bundle is mostly under compression, the ends of the bracing members, if inserted perpendicularly into the bundle, will be pressed due to friction. Therefore, the final designed system was parabolic arched space truss with friction connections. The system was modelled physically and digitally in order to be structurally analysed.

Also, the full orthotropic mechanical properties of the Nile Valley date palm were measured inside the metalloids laboratory in the faculty according to European Standard EN 408 : 2003. Then the properties were defined into SAP2000, and the results of the digital structural analysis showed that the structure was safe to cover up to 12 metres span.

Currently, the faculty is preparing to build this structure inside the campus to inspire the students and researchers to rediscover the potentials of date palm rachis, as a pure Egyptian building material.



Date palm rachis and the design structure



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A'Sharqiyah University bags national economic studies award

Oman – A'Sharqiyah University (ASU) was awarded second position in Economic Researchers and Studies Award organized by Oman Chamber of Commerce and Industry (OCCI) out of 40 studies submitted by higher education institutions and technical colleges across the Sultanate of Oman.

The objective of the OCCI awards is to support economic research for creating solutions and suggestions for various challenges faced by the private sector and the Omani economy in general.

Mr Said bin Salah al Kiyumi, chairman of OCCI, awarded the shield and cash awards to the team of ASU headed by Prof Nabil Sultan, dean of College of Business Administration (COBA).

The ASU study investigated the opportunities and challenges faced by the family-based entrepreneurial firms in the North A'Sharqiyah region of Oman.



A'Sharqiyah team (with Prof Nabil sultan) receiving the award

The study revealed that governmental initiatives such as funding start-ups and offering training to entrepreneurs proved beneficial for the family based entrepreneurial initiatives in the region.

On the other hand, the study also revealed that expensive raw material, high operational costs, tough market competition and long registration

processes remained the major obstacles faced by them amongst several others.

The study findings have implications for the relevant authorities and the governmental bodies which are engaged in the development of entrepreneurship and family-based enterprises in the North A'Sharqiyah governorate of Oman, where ASU is situated.

American University in Dubai voted university of the year



Representatives from the American University in Dubai receiving the awards for both University of the Year and Outstanding Employer Engagement Initiative

United Arab Emirates – The American University in Dubai (AUD) was voted the university of the year and awarded Outstanding Employer Engagement Initiative at the Najah Abu Dhabi, the UAE's leading higher education event, which is now in its 10th year.

Taking place for the first time this year, the Student Choice Awards were created

by the organisers of NAJAH to celebrate the achievements of universities over the past year. A survey was sent out to current students, as well as alumni, by universities across the country encouraging them to vote across five specific categories: outstanding support for students; outstanding employer engagement initiative; extracurricular activities – clubs and societies; campus facilities, and university of the year.

On winning the Outstanding Employer Engagement Initiative award, Tala K Makhoul, director of student retention and success at AUD, and head of the Career Services Office commented: "Undoubtedly, today's workplace is a demanding and competitive environment, and that is why it is now more important than ever to have good guidance and advice when selecting a career path. AUD's career services office helps to ensure that students successfully bridge the transition from university life to work life through equipping them with career guidance, interview tactics, job search skills, marketplace readiness preparation, and a network of employment opportunities through the university's very strong external relations with leading companies in the UAE and the region"

Najah is held twice a year, once in Abu Dhabi and once in Al Ain. Held under the patronage of His Excellency Sheikh Nahyan bin Mubarak Al Nahyan, minister of culture and knowledge development, Najah is supported by the Abu Dhabi Education Council and the UAE Ministry of Education.



Benha University, Egypt

The Best Choice For a Better Future

Benha University (BU) is the 13th university in foundation among 27 Egyptian University. There are several places for campus at Benha, Mochtohor, and Shubra. Benha University traced its roots to the first high School of Agriculture in Egypt, founded in 1911, then as a branch of Zagazig University in 1976. In 2005, Benha University gained its independence and ever since, this was achieved by launching a university wide campaign of faculty and staff training, as well as major laboratory and infrastructure reform. This campaign is increasing and ongoing focusing mainly on enhancing teaching, communication, and research skills, as well as, computer and IT capabilities, and quality assurance and control. Many of these projects were funded by international entities such as the World Bank and the European Union.

Benha University



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The University of Dammam’s model platform for social projects

Saudi Arabia – Universities have social responsibilities. Recognising this tenet, the University of Dammam in the Kingdom of Saudi Arabia created a deanship that institutionalises the concepts of community service and sustainable development. It has made a pioneering effort in taking a comprehensive view of the three dimensions of sustainable development – social, economic, and environmental – in planning and implementing numerous projects.

Since its establishment in 2012, the Deanship of Community Service and Sustainable Development (DCSSD) has emerged as a leader of the community in the Eastern Province and as a curator for social services provided by the University of Dammam.

Dr Najah Al-Garawi, who was appointed the first dean of DCSSD, has led the university’s efforts in community outreach. Under her leadership,

DCSSD’s departments of community service, sustainable development, and strategic partnerships have promoted and coordinated several projects. The general objective in all instances is to address community issues and develop meaningful solutions to problems on the basis of scientific and qualitative research.

A recent initiative of DCSSD is Dafeh, a programme suggested by the University of Dammam to the Ministry of Education, and later developed by the collaborative efforts of the University of Dammam and Saudi Aramco. The programme focuses on providing training in disaster preparedness to volunteers from within local communities so as to ensure that there is a trained local force that can work with the Civil Defense personnel in times of natural disasters and emergencies.

Following detailed observations on the often chaotic manner in which emergencies are handled by untrained members of the public, often posing risks

to themselves and those whom they try to rescue, a programme was developed on a clear, systematic basis to offer the public a set of short training courses. The areas of training include handling electrical accidents, fires, floods, building collapses, crowds, and medical situations that require first aid. Thus far 1,051 individuals, including 980 students, have attended 45 structured training sessions lasting 25 hours, organised by DCSSD free of charge.

Another initiative by DCSSD is the creation of a social responsibility bank (SRB). This is a repository of projects on social curricula, social studies and research, and community service. Faculty, students and other stakeholders are invited to contribute to this bank of ideas and projects. Comprehensive grassroots participation in this manner would help achieve the goal of developing innovative community projects and activities consistent with the community’s hopes and aspirations.

Effat University student represents Youth for Human Rights at UN



Youth for Human Rights summit 2016 delegates

Saudi Arabia – Rahaf Alsaari, a marketing student at Effat University in Saudi Arabia, was recently named “Youth Delegate for Youth for Human Rights International (YHRI)” to be the first Saudi to hold this title.

Youth for Human Rights International (YHRI) is the youth component of United for Human Rights, a global non-profit organisation which was established in 2001 in Los Angeles, USA, to support youth volunteers who believe in the importance of using education to end global human rights violations and to become advocates of human rights, specifically the

United Nations Universal Declaration of Human Rights, and inspire others to adopt and practice these rights as messengers of tolerance and peace.

According to YHRI, there are now more than 100 Youth for Human Rights International chapters around the world. Their award-winning educational materials are available in 27 languages, bringing the message of human rights to 195 nations.

Rahaf Alsaari presented an application to detect human rights violations when she

participated with two other students from Effat University in the Global Solutions Lab in June 2016. Moreover, she was named “Youth Delegate for Youth for Human Rights International” and was invited among other 72 young delegates, who were selected for their outstanding human rights work, to speak at the 13th Annual International Human Rights Summit, hosted at the United Nations headquarters in New York on 25 and 26 August 2016.

At the summit Rahaf gave a speech about her work to her peers and more than 400 guests and heard from six ambassadors and representatives of 17 permanent missions to the United Nations about the importance of Human Rights education to end global humanity perils like poverty, discrimination, wars, and human trafficking. In her speech, Rahaf, the delegate representing Saudi Youth, stressed that “Our unity relies on our humanity. It is our duty to teach and carry the Universal Declaration of Human Rights, and practice it.”



Rahaf Alsaari

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HBKU develops first Arabic language-inclusive feature film adaptation

Qatar – Hamad Bin Khalifa University's (HBKU's) Translation and Interpreting Institute, part of the university's College of Humanities and Social Sciences, has collaborated with the Doha Film Institute (DFI) to create a fully inclusive adaptation of an Arabic feature film for the first time. The newly adapted version of the film *The Idol* by Hany Abu Assad was screened as part of DFI's 4th Ajyal Youth Film Festival in front of an audience that included members of Qatar's hearing and visually impaired communities on 3 December 2016.

Students in HBKU's Master of Arts in Audiovisual Translation programme developed the additional content used in audio descriptions and subtitles for a special "trans-adapted" version of the film. The special screening was presented in Arabic with Arabic audio descriptions, pre-recorded Arabic sign-language interpretation, and enriched subtitles in Arabic and English.

Visually impaired audiences were able to fully experience the film through sound alone, thanks to the inclusion of audio descriptions of the film's visual elements. Attendees who were hard of hearing or had



The team behind HBKU's inclusive film project

difficulty processing speech, were able to enjoy the film through subtitles enriched with detailed information about sound effects and music.

Dr Amal Mohammed Al-Malki, dean of the College of Humanities and Social Sciences, noted: "Inclusivity is a cornerstone of translation and interpretation services. The idea that something should be accessible to everyone, regardless of their ability to understand the language of origin or

whether they have a visual or hearing impairment, is a frequently cited reason for why people get into the field of audiovisual translation.

"Our audiovisual translation master's students did a tremendous job ensuring *The Idol* could be enjoyed by all members of the community in Qatar, and we are very grateful to DFI for giving us the opportunity to collaborate with them for a special Ajyal Youth Film Festival screening."

LAU geneticist leads revelatory research into Ice Age populations



Lebanon – New genetics research led by Lebanese American University (LAU) Professor Pierre Zalloua has confirmed the existence of isolated populations around the Black Sea and the Northern Levant during the Ice Age.

Referred to as refugia, these populations lived apart from each other with no contact or inter-mixing for more than 25,000 years. "This allowed for distinct genetic signatures specific to each refugium to accumulate," the researcher explains.

A geneticist and dean of graduate studies and research, Zalloua worked together with a team made up of members from New Zealand's University of Otago, Saint Joseph University in Lebanon, and IBM,

to collect and study new genetic data. "Archeology indicates the existence of populations in certain areas, but it doesn't show that people were isolated," adds Zalloua.

Not only did his team confirm the existence of refugia, but they also traced their migration away from their isolation after the first ice melted some 15,000 years ago by mapping the genetic data against existing archaeological, paleontological, paleobotanical, and climate data.

Using Y-chromosome markers combined with autosomal data, they reconstructed population expansions from regional refugia in Southwest Asia. "We now know that we, in the Levant, migrated through the north around 12,000 years ago, and not directly from Africa," says Zalloua, noting that such findings enrich our understanding of our historical anthropology and of the significant impact climate plays in the way we live.

The Ice Age forced people who had previously been hunter-gatherers moving from place to place to live in restricted areas where conditions were habitable. This led to

the development of communities living in refugia. Among the team's findings was the existence of a refugium that had not previously been known. "We not only identified the expected genetic signatures within refugia around the Black Sea and Northern Levant, but also identified a genetic signature marking a refugia in the Arabian Peninsula yet to be identified through archeology."

Details of the distinct and datable expansion routes of these populations into Europe and North Africa are revealed in the study, published in *Scientific Reports*. The journal article expands upon these findings with a discussion about the possible correlation between these migrations and various cultural and climatic events evident in the archaeological records of the past 15,000 years.

Such a plethora of discoveries is never anticipated, says Zalloua. "We didn't set out to say anything in particular. We plotted our data on a map together with climate and archeological evidence and it all made sense."

Hebrew University study reveals a biological link between stress and obesity

Israel – For the first time, researchers have revealed a connection between anxiety and metabolic disorders at the molecular level; the discovery opens new possibilities for detecting and treating both symptoms

Metabolic and anxiety-related disorders both pose a significant healthcare burden, and are in the spotlight of contemporary research and therapeutic efforts. Although intuitively we assume that these two phenomena overlap, the link has not been proven scientifically.

Now, a team of researchers from the Hebrew University of Jerusalem, headed by Prof Hermona Soreq from the Edmond and Lily Safra Center for Brain Sciences and the Department of Biological Chemistry at the Faculty of Mathematics and Sciences, have revealed the molecular elements that bridge anxiety and metabolism – a type of microRNA that influences shared biological mechanisms.

"We already know that there is a connection between body and mind, between the physical and the emotional; and studies show that psychological trauma affects the activity of many genes. Our previous research found a link between microRNA and stressful situations – stress and anxiety generate an inflammatory response and dramatically increase the expression levels of microRNA regulators of inflammation in both the brain and the gut, for example the situation of patients with Crohn's disease may get worse under psychological stress," says Professor Soreq.



Laurel and Hardy and the microRNA connection – it is not coincidental that the heavier character is also the more anxious of the duo. (credit: Petra Pollins)

"In the present study, we added obesity to the equation. We discovered that some anxiety-induced microRNA are not only capable of suppressing inflammation but can also potentiate metabolic syndrome-related processes. We also found that their expression level is different in diverse tissues and cells, depending on heredity and exposure to stressful situations," explains Prof Hermona.

The family of microRNA genes is part of the human genome, which was considered until not too long ago as "junk-DNA". However, microRNAs are now known to fulfill an important role in regulating the production process of proteins by other genes. These tiny RNA molecules, which are 1% of the average size of a protein-coding gene, act as suppressors of inflammation and are able to halt the production of proteins.

The research paper, published in the journal *Trends in Molecular Medicine*, details the evidence linking microRNA pathways, which share regulatory networks in metabolic and anxiety-related conditions. In particular, microRNAs involved in these disorders include regulators of acetylcholine signaling in the

nervous system and their accompanying molecular machinery.

Metabolic disorders, such as abdominal obesity and diabetes, have become a global epidemic. In the USA, the prevalence of metabolic syndrome is as high as 35%. In other countries, such as Austria, Denmark and Ireland it affects 20–25% of the population.

Anxiety disorders are harder to quantify than metabolic ones. They include obsessive-compulsive disorder (OCD), post-traumatic stress disorder (PTSD) and phobia. The full burden of the anxiety spectrum is difficult to assess, due to under-diagnosis and poorly defined pathophysiological processes.

This newly revealed link offers novel opportunities for innovative diagnoses and treatment of both metabolic and anxiety-related phenomena.

"The discovery has a diagnostic value and practical implications, because the activity of microRNAs can be manipulated by DNA-based drugs," explains Professor Soreq. "It also offers an opportunity to reclassify 'healthy' and 'unhealthy' anxiety and metabolic-prone states, and inform putative strategies to treat these disorders."

The Hebrew University of Jerusalem is Israel's leading academic and research institution, producing one-third of all civilian research in Israel.

Holy Spirit University of Kaslik pioneering friendly society

Lebanon – The Holy Spirit University of Kaslik (USEK) in Lebanon, strongly committed to its role of university at the service of the society, has launched a new inclusivity project entitled "Special Needs Friendly City".

This project will be active on different fronts, offering training to students, working together with the municipal representatives to develop structures, raising awareness on inclusivity issues within the civil society and promoting tolerance and sustainable development. It intends to work hand in hand with the civil society, the public sector, the youth and all concerned stakeholders to allow the creation of a friendly environment for people with special needs, through the

improvement of all infrastructures, whether professional, social, cultural, or residential.

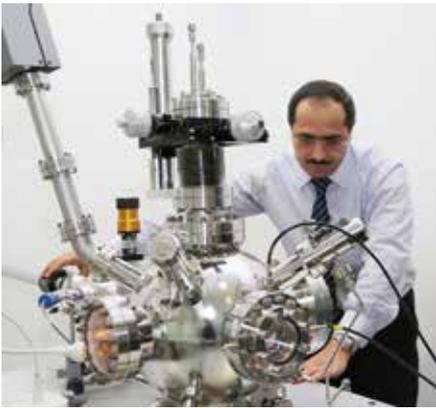
Initiated by USEK Department of Social Sciences, this ambitious project has been made possible by the remarkable community involvement of USEK students through the Lebanese Youth in Community Action Group, the support of the NGO Youth for Peace, the US Embassy to Lebanon, the Municipality of Ballouneh and Association Anta Akhi.

The Lebanese Youth in Community Action Group has been created by 40 students from various academic units who have participated in the general education course on "civic engagement" offered by USEK department of social sciences and is accessible to all USEK students. To build their "Special Needs

Friendly City" project, these 40 students have participated in an additional training, delivered by the NGO Youth for Peace and the U.S. Embassy to Lebanon.

The group drafted a "Special Need Friendly City Charter" to guide municipalities to become more accessible to people with special needs. The municipality of Ballouneh will be the first municipality to implement the charter and the project will be then extended to the other municipalities of the region. The group and the strong partnerships established to build this project will ensure its sustainability and the conditions to develop numerous other activities.

Khalifa University professor develops world's smallest nanoprobe



Dr Rezeq Working on Ion Microscope

United Arab Emirates – Dr Mohamed Rezeq, an associate professor of applied math and sciences, and electrical and computer engineering at Khalifa University has developed a nanoprobe the size of a single atom. The nanoprobe, also called a nano-tip, is an extremely sharp needle-like tool.

Typically, nanoprobes are more than 10,000 times sharper than a human hair, however the one developed by Dr Rezeq is the smallest in existence and capable of producing an image of one atom magnified around 10 million times.

In order to create these nanoprobes Dr Rezeq and his team designed and built a special microscope that enables the observation of the surface atoms on the nanoprobe apex. His method involves using electrons to locally bombard the end of the probe, thereby heating and then diffusing the atoms along the electric field of the tip and restructuring them to create an even sharper probe. This process can be controlled in order to create a nano-tip conical structure that ends with a single atom.

"I had to develop the local electron bombardment method for fabricating reliable and robust nanoprobes, which in turn can be used as a tool for fabricating nanoelectronic devices at a few nanometer scale. There is a growing demand in industry for making the electronic devices smaller and smaller whereas the fabrication tools are not capable of fulfilling these demands due to natural limitations," says Dr Rezeq.

"Our special nanoprobes can provide the ultimate solution to overcoming these limitations, as the nanoprobe radius is less than 1 nanometre. The single atom probes we make can be applied to several aspects of nanotechnology. For instance, scanning electron microscopes (SEM) and transmission electron microscopes (TEM) use them as a source of electron beams. The smaller the size of the probe the more focused electron beams can be generated. This results in a significant improvement in the image resolution and brightness of these microscopes, so more details can be observed."

"Our single atom probes are futuristic tools for fabricating and characterising nano-devices and nanomaterials at a very small scale, beyond the limits of existing tools," said Dr Rezeq. "They can also be used to look at biological cells and molecules with a level of detail that isn't available via existing techniques and will be especially useful for diagnosing diseases and viruses, because our probe is smaller than any molecule or cell."

Dr Rezeq's work with his team has led to several publications in highly reputable international journals, including The Journal of Applied Physics and the Journal of Applied Surface Science.

The first and only business school in Middle East to be EQUIS-accredited

United Arab Emirates – Abu Dhabi University's College of Business Administration has achieved a new and momentous milestone as the first and only higher education institution in the Middle East to receive international academic accreditation from EQUIS, the leading international system of quality assessment, improvement and accreditation of higher education institutions in management and business administration.

Created by the European Foundation for Management and Development (EFMD), EQUIS (EFMD Quality Improvement System) provides a reliable indication of international quality in business and management education, a significant level of internationalisation as well as integration with the corporate world.

Commenting on this new accolade, HE Ali Saeed Bin Harmal Al Dhaheri, chairman of Abu Dhabi University's Executive Board, said: "With this renowned international accreditation, Abu Dhabi University's College of Business joins the elite 1% of top business schools worldwide who have been accredited by both EQUIS (Europe) and AACSB (USA). This is not only a solid testament to the quality of our academic programmes, students and faculty, but it also demonstrates the college's dedication to the effective dissemination of knowledge to the community, its focus on executive education to enhance corporate connections, and a clearly articulated strategy for internationalisation."

First Jordanian satellite programme

Jordan – Under HRH Crown Prince Hussein's initiative, Jordanian students in collaboration with Jordan University of Science and Technology (JUST) will develop the first Jordanian satellite programme in CubeSat form to be launched in 2017.

The Crown Prince Initiative aims to support the development of entrepreneurial innovative projects by Jordanian youth. The president of JUST, Professor Al-Jarrah, has confirmed that the university shall support the initiative with all available resources at its disposal to ensure the

success of the project and to support the coordinators of the project to manufacture the satellite components in the university laboratories and at the Centre of Excellence for Innovation, which aims to embrace the creative Jordanian youth.

JY1-SAT is Jordan's first satellite programme, built in the CubeSat form factor which is a miniaturised satellite used by universities worldwide as an educational and research platform. Their small size makes them efficient and inexpensive to build, launch and operate. The JY1-SAT team is a multidisciplinary team comprised entirely of students from various

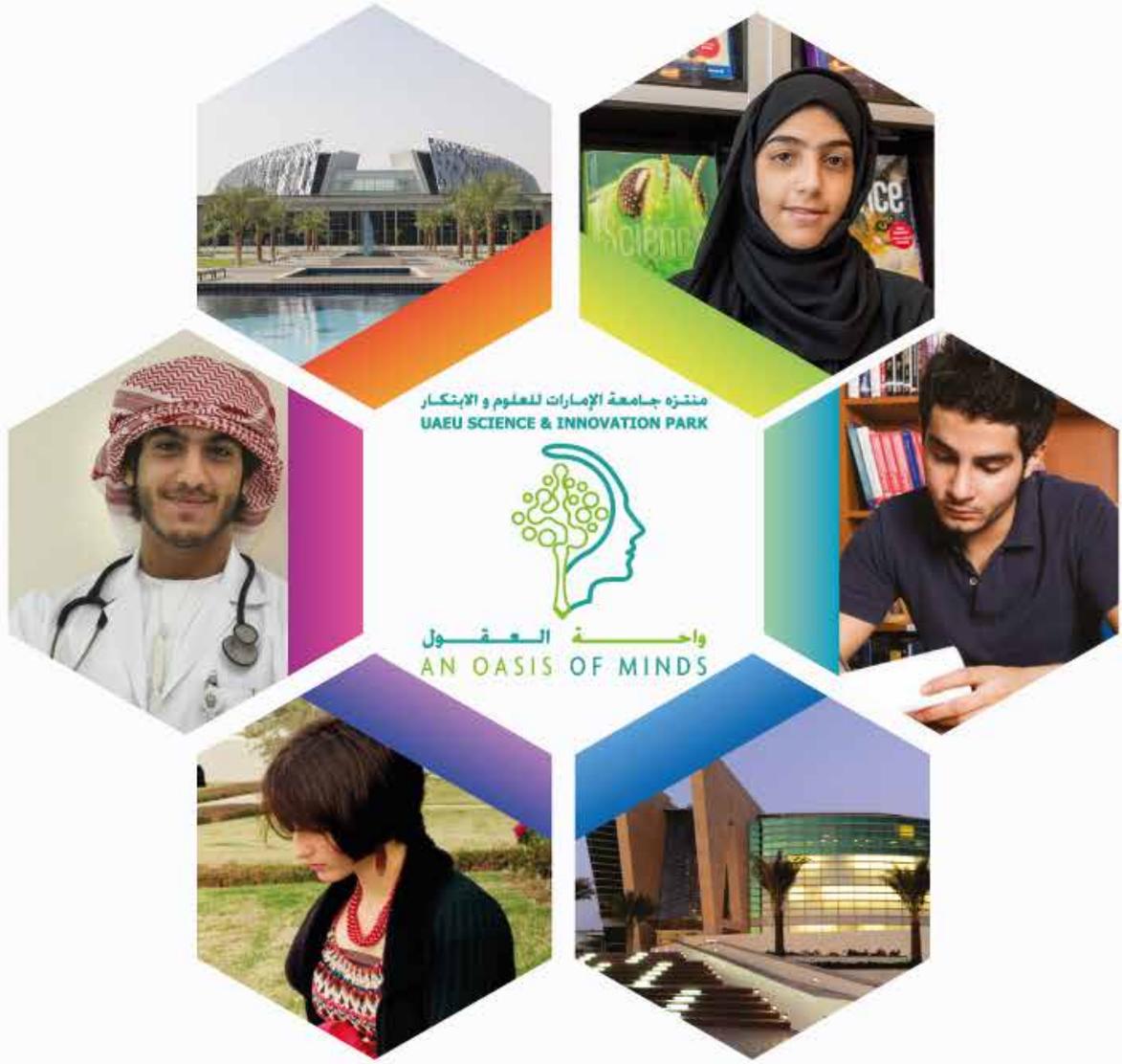
Jordanian universities, and a number of faculty supervisors. Several of the JY1-SAT team members are alumni of Crown Prince Foundations NASA-Jordanian internship programme.

Under the supervision of the Crown Prince Foundation, JY1-SAT will have two purposes: 1) to allow university students in Jordan to acquire knowledge in space science and space applications; 2) to set the ground for a space programme in Jordan that will be developed to have scientific and commercial targets in the near future.



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UJ graduate designs innovative bed for children

South Africa – A novel hospital bed designed by a University of a Johannesburg (UJ) graduate was recently recognised at the launch of the Nelson Mandela Children's Hospital (NMCH) in December 2016.

Mr Jed Aylmer, a graduate in Industrial Design from the UJ Faculty of Art, Design and Architecture (FADA), designed an innovative and colourful plastic bed. Located in Parktown, NMCH is a 200-bed, dedicated paediatric hospital which will be built into the referral network of academic hospitals throughout the country. This unique healthcare model will serve patients in both the public and private healthcare system.

The hospital looked to ways in which to develop and encourage new concepts for paediatric healthcare approaches. Part of this was looking at how the child is considered in hospital. For Aylmer this was an opportunity to relook the design of the environment in which the child would spend a great deal of time – the cot-bed.

Aylmer, the director of Praestet (Pty) Ltd, developed the attractive "Symba Paediatric Hospital Bed" proposal as his capstone project in the Department of Industrial Design. With help from his UJ supervisor Victor Dos Santos, lecturer in Industrial Design, Aylmer began sculpting his ideas and developing a theoretical citation. "The result was a 'first pass' design of a bed

which looked at offering a comforting environment in which a child can recover," explained Aylmer.

The fundamental design approach for Symba was how to improve the environment in which a child recovers while considering the needs and requirements of medical professionals. "The problem with being a sick toddler is that 'you get stuck in a cage,'" remarked Aylmer. He went on to explain that although the child should be kept safely in the bed, it shouldn't mean that the product must resemble a cage. The clear plastic sides on Symba reduces the cage-like feel of conventional cots; and the colourful plastic bed is softer and warmer to touch than cold steel cots.

Fifty beds have been ordered from Praestet for the Nelson Mandela Children's Hospital, and will be delivered in the coming months. All four cot sides can be opened in contrast to standard cots which only have two sides that can be lowered. The cot-side at the head and foot can be lowered, allowing doctors to reach a child's head or neck for a medical procedure.

Eight attachment ports, two on each bed corner, allow oxygen tanks, drips and medical devices to be attached. This means only one nurse is needed to move the bed to imaging or an alternative ward. The mattress cradle can also be raised to various medical positions for optimal recovery of the child.

Symba has been developed according to the latest international guidelines on paediatric bed design.

Aylmer remarks that the next steps for Praestet are to begin consolidated manufacture of the beds specifically looking to set up "assembly facilities and distribution teams to begin both local and international sales of Symba." The company will also focus on continued development of complimentary products for the healthcare space. Part of this is ensuring that the local design and manufacturing talent of South Africa is showcased on a global level.



Energy-generating carpet

United Arab Emirates – A team of four female students from United Arab Emirates University (UAEU) are set to shake up the region's interiors industry with their energy generating carpet.

Students Maitha Jumaa Al Kaabi, Zinab Ahmed Al Haddad, Razan Youssef Kharouf and Hamda Ahmed Al Derei are the co-founders of Bezeo, an innovative start-up based out of UAEU's Science and Innovation Park. The creative team, who were finalists in last October's GITEX start-ups pitch competition, first started working on the carpet in January 2016 with one goal in mind: to create a device that allows everybody to leave a positive footprint on the environment.

"This carpet is based on material that can generate electricity from our steps and weight," says Maitha Jumaa Al Kaabi, the company's chief financial officer. "Our device can help in reducing the consumption of non-renewable energy, which results in lowering the levels of

CO2 emitted into the atmosphere, thus saving our environment. It is as simple as that. By stepping, walking or jumping on the carpet you can generate green energy. This harvested energy can then be a supplier for different equipment and devices."

The carpet can be installed anywhere and to the customer's specification, explains Zinab Ahmed Al Haddad, Bezeo's CEO. More broadly, she says Bezeo aims to support the UAE's Vision 2021 for a sustainable future. The team came up with the concept while working on a separate project. "One of the members of our group was working on the same material that we are using for another application, and when we researched more about this material we thought about the possibility of using it on floors to generate clean energy," explains Hamda Ahmed Al Derei, the firm's chief technology officer.

The material Al Derei is referring to is a form of piezoelectric material – piezoelectric substances are able to generate electricity when subjected to a mechanical stress.

Reflecting on their journey so far, Al Derei says: "The whole journey was somehow new to us. As engineers we were concerned with the technology but then we learned that we needed a great deal of knowledge from the business side to build our company. We are still facing some problems in the pricing of the product and the final shape of it"

To help the team hone their business skills Bezeo has been enrolled in the Science and innovation Park's P2M programme (Prototypes to Market) – the park's incubation programme for social entrepreneurship. What next for the carpet? "We're still in the initial stages as we just finished our pilot scale carpet that will be installed in UAEU," explains Razan Youssef Kharouf, Bezeo's chief operating officer. "After we finish our pilot test we will take it to the market."

In terms of target market, Kharouf adds: "We're targeting the most crowded public places to maximise the energy generated."

No more hazardous insecticide spraying!

South Africa – Researchers at the University of Pretoria Institute for Sustainable Malaria Control have developed insecticide-impregnated wall linings to protect residents in the Vhembe district of Limpopo Province in South Africa against malaria.

The polyethylene wall lining which is impregnated with insecticidal chemicals was developed by researchers at the institute in collaboration with chemical engineers at the university's Institute of Applied Materials (IAM). The linings contain the insecticides deltamethrin and alpha-cypermethrin, which show some toxicity to humans, but to a far lesser extent than a commonly used insecticide like DDT. To limit human contact, linings are installed out of reach of children, and families are instructed not to touch the material.

The use of wall linings for mosquito control rather than sprayed insecticides reduces health risks as the sprayed insecticides coat dust particles, leading to unavoidable human exposure through contaminated dust on furniture, on floors and in the air. This dust can also contaminate food and water in sprayed homes.

In 2012 the Institute initiated a six-month pilot study in an area of a village where insecticides were not sprayed to see

whether the linings were acceptable to the community. The response was positive, prompting a decision to leave the linings in the homes of participants to see how long they remained effective. The linings from the initial study have now been in the field for four years, and results have far exceeded expectations with tests showing that the linings remain close to 100% effective in killing mosquitoes. Mosquitoes are knocked down within 30 minutes of contact with the linings, and die within 24 hours in laboratory tests. Importantly, the linings remain well above the World Health Organisation (WHO)'s recommended minimum effectiveness for internal wall linings. Reports from communities corroborate these results, as community members reported less biting and less annoyance overall.

Feedback from community members who were included in the study and have now taken possession of their wall linings, has been overwhelmingly positive. "Those who have moved house have asked if we can move the linings from their original position because it is so effective," said Dr Taneshka Kruger, senior project coordinator at the Institute.

The Institute now has a commercial partner for further development of this innovative malaria control technology. The company has



Huts at the Tonga Malaria Control Field Station in Mpumalanga, South Africa

conducted their own tests on the wall linings to better understand its qualities, including how long the linings will remain effective after washing.

Dr Kruger says the next steps will be 1) to conduct phase two field trials using trial buildings where mosquitoes that die through contact with the lining can be counted accurately, 2) to improve how the linings are fastened to the walls, and 3) to look at alternative insecticide options – especially WHO-approved insecticides.

"The wall linings are going to remain in the huts and the houses for as long as the people want them there and we hope that phase two will start as soon as possible," said Dr Kruger.

Al Azhar University students develop Gaza's first solar car



Palestine – Inspired by the permanent electricity blackouts and diesel shortage in the besieged Gaza Strip, two students from the Mechatronics Department, Faculty of Engineering and Information Technology at Al Azhar University-Gaza have built Gaza's first prototype solar-

powered car, going for renewable, alternative and clean energy.

The three-wheel vehicle came as a graduation project for the 23-year-old students, Jamal Al Miqaty and Khalid Al Bardawil, who constructed it in the shape of a quadrilateral

to be more suitable for affixing two photovoltaic panels, one on the roof and another on the rear.

The car, weighs 200 kilogrammes, and generates 300 Watts of electricity to provide 160 Watts for its small engine. Moreover, the storage capacity of the battery allows the car to run without solar power for four hours.

The model, designed for one passenger, succeeded in reaching the speed of 30 kilometres per hour, which is described as "long" depending on electricity generated from solar energy.

Jamal and Khalid faced big challenges during this project as they manufactured the car from scratch, recycling pieces obtained from old devices and amending them with needed p.

AURAK and UAE Space Agency sign partnership agreement



Professor Al Alkim and HE Dr Al Romaithi exchanging tokens of appreciation following the signing of the memorandum of understanding

United Arab Emirates – The American University of Ras Al Khaimah (AURAK) has signed a partnership agreement with the UAE Space Agency, officially putting pen to paper in the federal institution's head office in Abu Dhabi.

A delegation from the university, consisting of Professor Hassan Hamdan Al Alkim, its president, Professor Mousa Mohsen, dean of the School of Engineering and director of RAK Research and Innovation Center, and Dr Abdul-Halim Jallad, director of the university's

newly-established ICT Center for Teaching and Creativity in Informatics Communication and Networking (ICONET), attended the signing ceremony.

Prof Hassan Hamdan Al Alkim welcomed AURAK's latest agreement, stressing, "We pride ourselves on being a government-owned university and are always eager to contribute to the advancement of this country. This cooperation with the UAE Space Agency represents a significant opportunity for mutual benefit, which will ultimately strengthen our nation's role in the space sector. Furthermore, signing a memorandum of understanding with such a prestigious entity underlines the quality of the research going on at AURAK, through our Ras Al Khaimah Research and Innovation Center, as well as our ICT Center for Teaching and Creativity in Informatics Communication and Networking."

HE Dr Khalifa Al Romaithi, chairman of the UAE Space Agency, added: "This agreement is in line with the foremost goals of the UAE Space Agency. By collaborating with academic institutions within the UAE we will be supporting the space sector, promoting

scientific research and innovation, and directly engaging with students in order to inspire them to think about space, technology, and their role in building the future of our country. We are extremely pleased to be collaborating with such a wide range of respected entities and we look forward to working closely with them."

The memorandum of understanding caters for research-based cooperation and knowledge-sharing between the two parties, with the intention of supporting the space sector through collaboration in space science, education, research, technology and applications. It is envisioned that the agency's satellite programme will be utilised to observe impacts of various environmental phenomena occurring in the UAE.

The agreement is particularly relevant to AURAK whose School of Engineering consists of a total of ten undergraduate programmes and a master's programme. The university's programmes in computer science and electronics and communications engineering programmes both received ABET accreditation in July 2016.

Iranian university holds first USERN international congress



Iran – Tehran University of Medical Sciences (TUMS) held the first Universal Scientific Education Research Network (USERN) international congress in the capital city of Iran, Tehran, from 8–10 November 2016.

The USERN has been established with main purpose of peaceful and humanitarian promotion of education and research,

universally. It comprises the top 1% of scientists in all scientific fields as the advisory board members who would manage and supervise the educational and research programmes in their field of specialty. There are more than 150 top scientists, including eleven Nobel/Abel laureates, among the advisory board members of USERN.

The theme of the congress was science without borders, emphasising the important role of multidisciplinary studies without geographical borders. Different aspects of science were covered during this conference, which was attended by Nobel/Able laureates and top scientists worldwide, including John Gurdon, the Nobel prize winner for physiology or medicine.

The congress included expert meetings, workshops, panels, and keynote lectures. The programme started on Tuesday morning (8 November 2016) and ended on Thursday (10 November 2016). At the closing ceremony (World Science Day for Peace and Development), USERN prizes were awarded to a number of talented junior scientists.

Palestine's first techno park



Palestine – The long-awaited vision of a full-fledged innovative hub in Palestine has become a reality. Spreading across 20 dunums of Birzeit University land, the Palestine-India Techno Park will be the top location for technology transfer in Palestine, and a key point of contact for innovative start-ups looking to transform knowledge into marketable products and services.

Palestine's President Mahmoud Abbas and Birzeit University Board of Trustees Chair Hanna Nasir laid the foundation stone for the Techno Park, which is being funded by the Republic of India.

The park will provide a stimulating environment facilitating innovation and contributing to the creation of new jobs and enhanced economic viability, aiming to nurture innovation-led programmes across knowledge-based industries and develop synergies in the creative and technology clusters.

The techno park will embrace environmental responsibility and modern industrial companies, offering an opportunity for IT businesses, communication companies or start-ups to launch their businesses in the park.

According to Nasir, this park will complement Birzeit's mission to reach out to the Palestinian community through academic programmes, cultural programmes embodied in the Palestine museum, which was also established on 40 dunums of university land, and now through this techno-park that will bring knowledge to those in the fields of science, technology and economy.

"We are building up a culture of innovation and environmental responsibility, Palestine-India Techno-park will be bringing people together from the fields of science, technology and economy. Variety of rooms, offices and other spaces will be available, all equipped with the latest infrastructure," Nasir concluded.

Qatar University building world's largest grandstand simulator

Qatar – With the opportunity to host the 2022 FIFA World Cup, Qatar is expecting to awe the world with its truly unique stadia to be built and/or renovated for this event. Stadia are architecturally challenging structures where vibration serviceability can become highly risky, considering thousands of people generating huge amounts of load. This type of loading creates the most potential for high levels of vibration, especially when the individuals in a crowd are involved in some sort of coordinated motion such as bobbing, jumping and dancing.

The new stadia in Qatar will also be subject to extreme temperature, humidity, wind effects from the gulf as well as sandstorms. Such harsh environmental conditions can induce severe structural damage affecting the reliability and safety of the stadia.

A pan-continental team including researchers from Qatar University (QU), University of Central Florida and University of Alberta is currently conducting comprehensive analytical and laboratory joint studies related to structural health monitoring and vibrations serviceability of stadia. The ultimate goal of this research project is to develop a state-of-the-art automated system for monitoring the structural condition and the vibration levels of the stadia during 2022 FIFA World Cup games at a network level.

As a first step, the QU team is currently constructing the largest grandstand simulator ever built in a laboratory environment. With footprint dimensions of 4.5 metres by 4.5 metres, the main purpose of this structure is to serve as a test bed for the newly developed structural health monitoring techniques. QU grandstand simulator, which will host up to 30 spectators, is designed according to the safety guidelines and recommendation of modern stadia. Additionally, the structure will be instrumented with cutting-edge sensors, data acquisition systems and processing units.

So far, only the main frame of the structure has been constructed. The accessory parts of the grandstand simulator including the risers, treads, handrails, and seats will be installed soon in the next stage of construction.

After the completion of the laboratory studies on QU grandstand simulator, the structural health monitoring system will be tested in a real-life stadium in Qatar. The research team is currently investigating the opportunities for instrumenting one of the stadia in Qatar for in-service and long-term monitoring during pre-world cup games.

Jordanian university students shine at IEEEXtreme

Jordan – A world-class distinction was added to the list of PSUT students' achievements in prestigious international programming competitions, when a team of the students from Princess Sumaya University for Technology, Amman, came in at eighth place in the international contest, and first place in the Arab countries category in the IEEEXtreme competition.

More than 2,000 teams from over 100 countries worldwide came together for the 24-hour competition, which was coordinated by the IEEE international organisers. Yarmouk University hosted the participating Jordanian teams. The competing teams were challenged to solve a total of 20 programming problems over a period of 24 hours, and points were scored based on the number of programming problems solved, the time taken to solve each question, and the difficulty of the

questions. PSUT finished with four teams in the top 100 in the international competition.

It is noteworthy that PSUT is the only Jordanian university to have attained top placements in the international level of this competition, where it reached the 25th place in 2014, and 17th in 2015.

Furthermore, PSUT recently achieved first place among the Jordanian universities at the ACM Arab Programming Contest held at Sharm El-Sheikh, Egypt, with the participation of over 100 teams representing all the Arab countries. In addition, three teams from the university took high positions in the 6th Annual National Collegiate Programming Contest ACM, hosted by the University of Jordan, against a field of 81 teams from 20 Jordanian government and private universities.

Canadian University Dubai professor wins Philippines' Presidential Award

United Arab Emirates – Dr Rommel Sergio, associate professor and chair of human resource management at Canadian University Dubai (CUD), has been selected as one of 23 outstanding international Filipinos to receive the prestigious Presidential Awards for Filipino Individuals and Organizations Overseas (PAFIOO) 2016 – the highest honour conferred by the Philippine government to citizens overseas.

Dr Sergio has been identified among nationals and organisations based in 11 countries around the world as an exemplary member of the global Filipino community. Recognised in the Pamana ng Pilipino (Legacy of the Filipino Nation) award category for his contribution to the heritage of the Philippines, Dr Sergio is the only PAFIOO recipient based in the Middle East. The Award particularly acknowledges his role in bringing honour to the country through excellence and distinction in the pursuit of his work overseas.

Coming from a disadvantaged background, Dr Sergio has always sought to promote access to education and to inspire young people to fulfil their potential. Having had to source his own scholarships from high school to college, he has now set up a foundation for underprivileged but deserving students in his home country, providing full tuition for ten college scholars across ten campuses.

Dr Sergio's selection for the Presidential Award follows a number of accolades

from the global academic community, recognising his outstanding contributions in both teaching and research. Earlier this year, Dr Sergio was named among the top 50 educators in the world by business and economics publication, the Oxford Journal, and recently received the Outstanding Global Research Leader Award from the International Association of Scholarly Publishers, Editors and Researchers.

With two PhDs, academically qualified certification from the Association to Advance Collegiate Schools of Business, and an extensive research portfolio, Dr Sergio represents a source of great pride among Filipinos, both at home and overseas. He has also demonstrated his strong commitment to supporting the Filipino community in the UAE, providing pro bono training to officials from the Philippine Consulate General and the Philippine Overseas Labour Office in Dubai, to enhance the psycho-social support system available to afflicted Filipino residents.

PAFIOO was institutionalised 25 years ago and is a biennial event celebrating overseas-based Filipinos that have dedicated their efforts to the service of their country. This year, more than 100 nominations were received from 22 countries, each of which were comprehensively reviewed by four different committees from the Philippine Diplomatic Posts, the inter-agency technical committee, multi-sector executive committee, and the President's Office.

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Egyptian university alumnus first man on Earth on three Antarctica summits



Egypt – American University of Cairo (AUC) alumnus, UN goodwill ambassador, and acclaimed adventurer Omar Samra has recently made headlines yet again, becoming the first worldwide to climb three different peaks in the Ellsworth Mountains, the highest range in Antarctica.

In recognition of this historic accomplishment, Samra was given the honour of naming all three mountains. He chose to name these three peaks, untouched by man for millions of years, Mount Samra, Mount Marwa and Mount Teela, after his family name, his late wife and his daughter, respectively.



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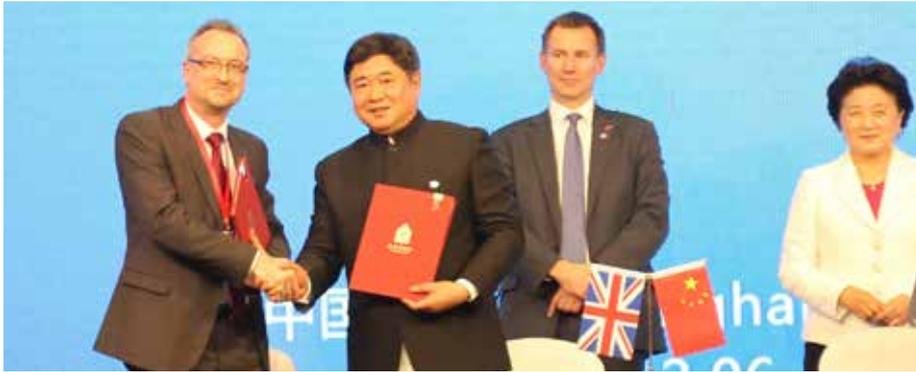


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Durham University enters partnership with China's iconic Palace Museum



Professor David Cowling, pro-vice-chancellor (arts and humanities), Durham University, and Professor Jixiang Shan, director of the Palace Museum in Beijing, at the signing of the agreement; in the presence of The Right Honourable Jeremy Hunt, UK secretary of state for health, and Madame Liu Yandong, vice premier of the People's Republic of China

United Kingdom – Durham University in the UK and the Palace Museum in Beijing have signed an agreement, bringing together these two world-renowned centres of research and cultural excellence for the first time.

The new partnership has developed from research currently being undertaken between the university's Department of Archaeology and experts from the Palace Museum, into early examples of Chinese porcelain found in Europe. The research aims to reveal more about the trading history of China as far back as the tenth Century AD.

The agreement will see Durham's Department of Archaeology working closely with experts at the Palace Museum on research in areas such as the distribution of ancient Chinese cultural artefacts in the Middle East and Europe. Opportunities for collaboration on teaching in areas including museums and heritage will also be explored.

Specialists in museum curation and exhibitions from both the Palace Museum and the University's Oriental Museum will also have the opportunity to share expertise on exhibition planning and cultural engagement.

The agreement between the two partners was signed as part of the ongoing series of "People to People" diplomatic talks between the UK and China, which took place in Shanghai in December 2016.

In the latest round of these talks a delegation from the UK, which included government ministers, MPs and business leaders, as well as representatives from Durham University, journeyed to China to share knowledge and experiences.

Professor David Cowling, pro-vice-chancellor (arts and humanities), Durham University, who signed the agreement on behalf of the University, said: "This partnership is a wonderful example of two leading cultural and educational organisations joining forces for advancement in both research and cultural engagement.

"Durham University is home to a world-class Archaeology Department and Oriental Museum, with significant research and teaching strengths in Eurasian archaeology, museums and heritage. Our hope is that this new collaboration will help us to develop these strengths even further."

The Palace Museum is one of the most prestigious museums in the world and is housed in the iconic Forbidden City complex in Beijing.

Durham University's Oriental Museum is home to one of the UK's leading collections of Chinese artefacts, including ceramics, silks, paintings and one of the largest holdings of jades and hardstones in the country. The Oriental Museum's Chinese collection was awarded "Designated Collection" status by Arts Council England in 2008, placing it amongst the best collections in England.

The Palace Museum and Durham University also both hold UNESCO World Heritage Site status. Durham University is home to over 1,700 students from China, and offers a Bachelor of Arts degree in Chinese studies which gives students the opportunity to spend a year living and studying in China. There are also a number of student-focused Chinese groups and societies providing support, cultural and social opportunities to the university's Chinese students, as well as the wider student body.

The scary effect of weight on your brain

Story credit: HOKU KRUEGER

United Kingdom – A recent study conducted by the University of Cambridge has found that the composition of white matter in the brains of overweight and obese middle-age adults is similar to that of older adults. In other words, young obese adults' brains are much older than they should be!

White matter is tissue that transmits signals in the brain, allowing for communication throughout the body. Loss of white matter, however, corresponds with loss of neurons in the brain, which leads to the development of a variety of diseases, including Parkinson's and Alzheimer's. In simple terms, being overweight damages your brain!



Researchers collected data from 473 cognitively healthy subjects, and split them into lean and obese groups. After gathering images of the white matter in their brains, they discovered that overweight individuals had far less white matter than their leaner counterparts. In fact, the reduced amount of white matter in their brains was in line with that of lean subjects 10 years older.

Importantly, the differences in white matter was only spotted in middle-aged and older participants, which shows the truth of the fact that the mind becomes vulnerable at an older age. The researchers, however, stressed that obesity was not found to have an effect on intelligence or cognition.

WOW!Movers & Shakers



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Deputy Vice Chancellor (Student Affairs and Alumni)
Universiti Malaysia Terengganu
Terengganu, Malaysia
Previous Appointment
Dean, Faculty Of Engineering Technology
Universiti Malaysia Perlis
Perlis, Malaysia



Prof Dr Nora'aini Binti Haji Ali
Registrar
Universiti Malaysia Terengganu
Terengganu, Malaysia
Previous Appointment
Director
Centre for Talent and Academic Innovation
Universiti Malaysia Terengganu
Terengganu, Malaysia



Dr Ahmad Faisal Mohamad Ayob
Director, International Centre
Universiti Malaysia Terengganu
Terengganu, Malaysia
Previous Appointment
Deputy Director, International Centre
Universiti Malaysia Terengganu
Terengganu, Malaysia



Asst Prof Ma Lourdes D Maglinao, MD, MHPed
Dean, Faculty of Medicine and Surgery
University of Santo Tomas
Philippines
Previous Appointment
Assistant Dean, Faculty of Medicine and Surgery
University of Santo Tomas
The Philippines



Rev Fr Jesus M Miranda, Jr, OP, PhD
Secretary-General
University of Santo Tomas
Philippines
Previous Appointment
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Rev Fr Napoleon B Sipalay, OP
Vice-Chancellor
University of Santo Tomas
Philippines
Previous Appointment
Prior of the Convent of Manaoag
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President
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South Korea
Previous Appointment
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Geo-Informatics
The Hong Kong Polytechnic University
Hong Kong
Previous Appointment
Professor, Department of Land Surveying and
Geo-Informatics
The Hong Kong Polytechnic University



Prof Hossam Hamdy
Chancellor
Gulf Medical University
Ajman, United Arab Emirates
Previous Appointment
Advisor to the President of Qatar University;
Associate Dean for Academic Affairs - College of
Medicine
Qatar University



Haseena Al Katheeri
Assistant Director
Undergraduate Student Academic Success
Zayed University
United Arab Emirates
Previous Appointment
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Quality Assurance Analyst Intramuros, Manila Philippines

Responsible for evaluating and testing new or modified software applications. Degree holder of Computer Science, Information Technology, Information Management, or any related IT and Management course. At least two years work experience on quality assurance testing, particularly on QA tools and techniques, bug tracking systems, test design, and automation.

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Responsible for the development of all software applications. Degree holder of Computer Science, Information Technology, Information Management, Computer Engineering, or any related IT and Management course. At least one year relevant work experience, specifically on platforms VB6 and VB.NET development language, web services and component development, XML, Transact-SQL scripting, use of Crystal Reports and integration with MS Office Integration.



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www.qsinconversation.com



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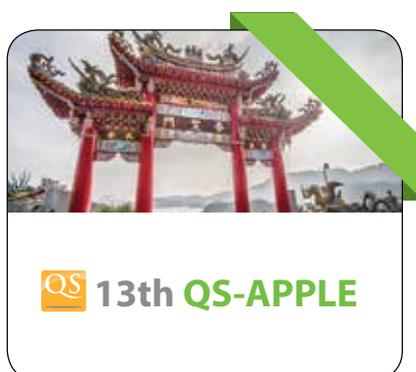
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Organising Partners:
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Dubai, UAE
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QS Subject Focus Summit – Medicine
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Kaohsiung Medical University
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13th QS-APPLE
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