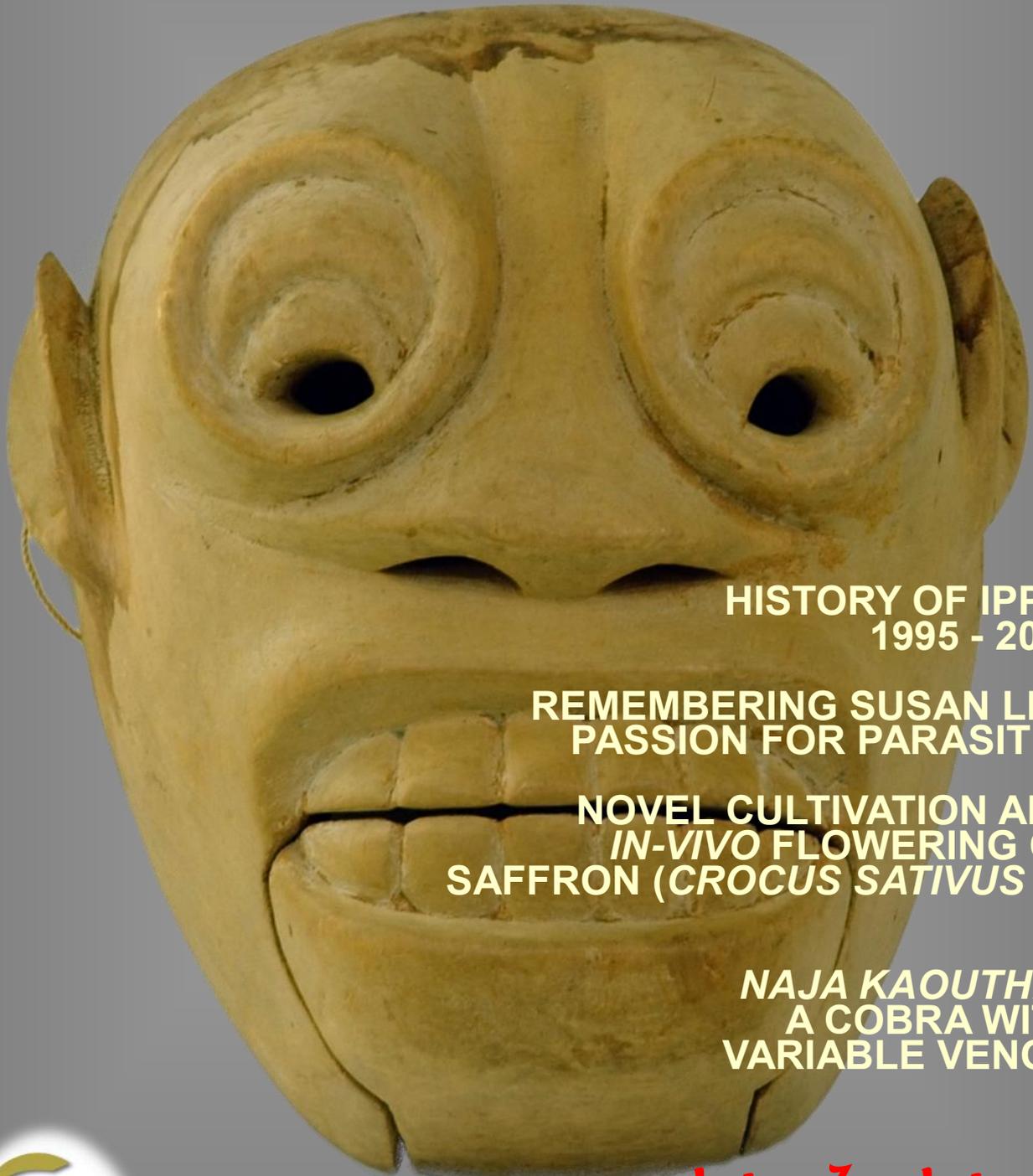


Volume 16 Number 2 2016



Bulletin



**HISTORY OF IPPP:
1995 - 2016**

**REMEMBERING SUSAN LIM:
PASSION FOR PARASITES**

**NOVEL CULTIVATION AND
IN-VIVO FLOWERING OF
SAFFRON (*CROCUS SATIVUS* L.)**

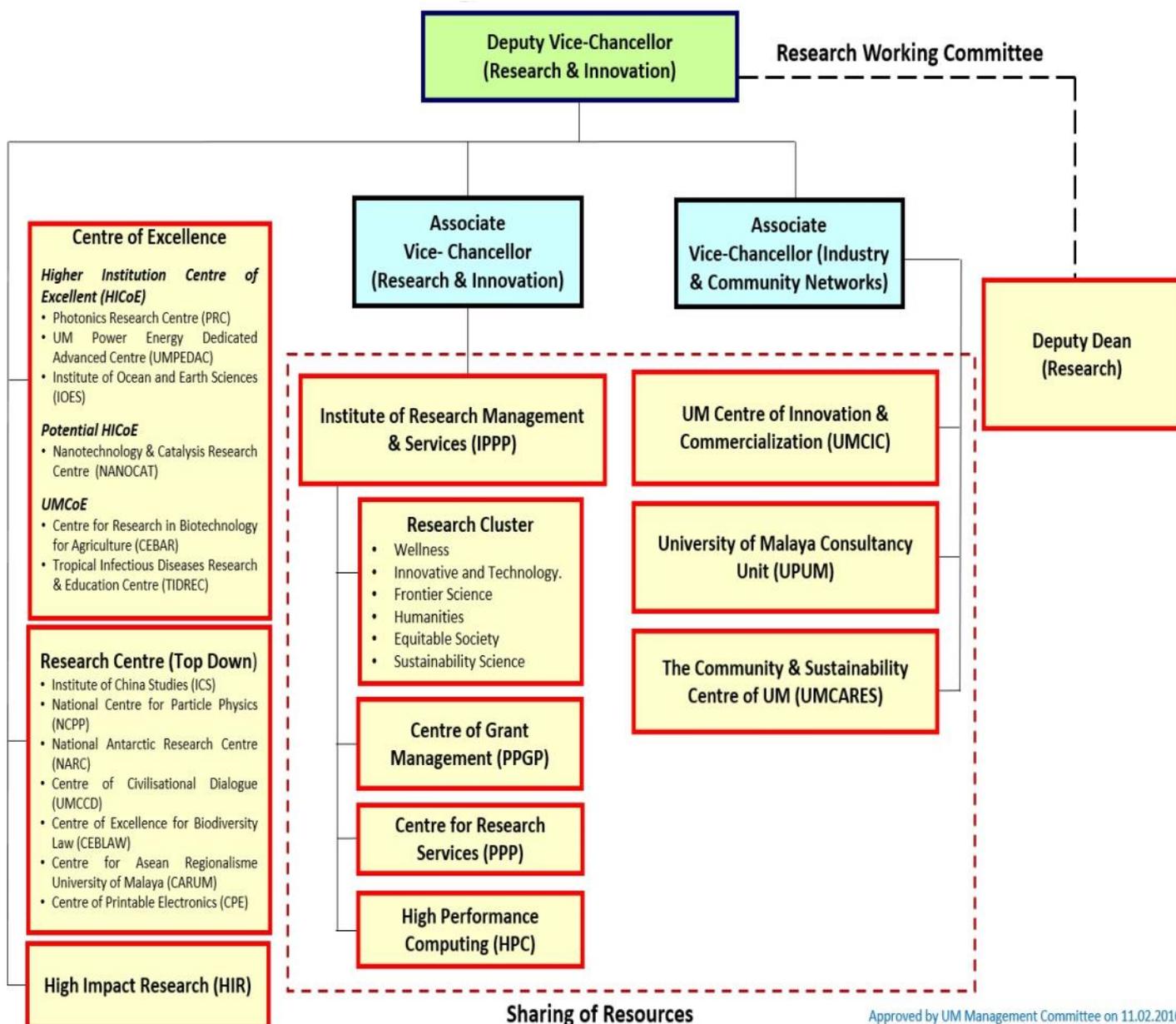
**NAJA KAOUTHIA:
A COBRA WITH
VARIABLE VENOM**

DIGITIZING *Mah Meri*
MASKS



Cover Photo Credit: Moyang Lumba Mask (from Digitizing Mah Meri Masks: Preserving a Tradition for the Future)

ORGANISATION CHART OFFICE OF DEPUTY VICE-CHANCELLOR (RESEARCH & INNOVATION)



PREFACE

Dear Friends and Colleagues,

I am happy to invite you to browse through the volume 16 of the UM Research Bulletin. Various topics of research is covered in this issue, ranging from biological research to humanities and to physics and engineering topics. This shows the diverse research areas that are covered by our researchers in UM. To carry out research in these challenging times is not easy. Thus, I applaud our researchers who keep on striving to achieve what they have set out to achieve in their quest for knowledge and novel findings to generate new technologies in spite of the major challenges they face, particularly in the difficult times of obtaining funding. We hope that these times will pass soon and we will once again be able to worry less about how to finance our research and our students. However, being researchers in this premier university, I am sure we can think out of the box and creatively do research that is blue ocean but at low cost and high impact. There are many research we can do, if we seriously sit down, look around us and think, that may not cost us that much in terms of funding requirement. We do not have to emulate the west or the rich nations but still do high impact research at a lower cost. The late Ahmad Zewail (Nobel Prize in Chemistry, 1999) once said, "If we work on research topics that the West is not interested in, we will always be 20 years ahead. If we work on research topics that the West is interested in, we will always be 20 years behind". So, let's put our heads together and work on research topics that interest us and benefit us with resources around us. This way, we will be able to make better impact to our community, which most likely give us better satisfaction, in the long run. All the best, my fellow researchers and friends. I am sure will wither these challenging times and come out the better for it.



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This issue of UM Research Bulletin will engross our readers with very interesting articles on cobra venoms, butterflies conservation, worm infections, men's health, Mah Meri masks, growing Saffron in Malaysia, solid polymer electrolytes, halal consumerism and zero waste initiative -- showing the diverse research and activities at UM. An info-page on UM staff and students, and history of the Institute of Research Management and Services (Institut Pengurusan dan Perkhidmatan Penyelidikan (IPPP)) have been included, and the bulletin also highlights this year's award winners including the Malaysian's Rising Star Award 2016. TRSM 2016 recipient Prof. Yvonne Lim's work on the health issues of Orang Asli is featured, as well as Assoc. Prof. Dr. Chong Wen Tong's Cross-Axis –Wind-Tunnel for being awarded first prize in the National Intellectual Property Award 2016. Congratulations to all winners and we look forward to continuing excellence in UM's research and innovation.

We have a poignant write-up on the late Prof. Susan Lim, whom I was privileged to know personally from our days in the then Institute of Advanced Studies (now Institute of Graduate Studies). I would sit beside her at meetings and watch her draw her parasite specimens free-hand, from the big outline to the minute details. Susan's incredible masterpieces are currently undergoing curation to be archived permanently in the UM library. UM has been blessed with abundant resources which have been instrumental in bringing us to where we are today. As we move on under uncertain funding prospects, we trust that UM researchers will continue to conduct impactful research by optimizing the use of existing facilities. It is time for us to take stock of what we have and look at different ways to sustain excellent research so that UM will keep on soaring upwards.

Wishing you the very best in your every endeavour, and a great year ahead for 2017!

EDITORIAL MESSAGE

Since the last issue, a few things have begun to make themselves apparent. It has been an eventful one year and UM research is going from strength to strength. At PPP, we look forward to providing more opportunities for submissions of journal from our researchers. In this competitive academia and research excellence, it is important that we continue to publish research in high impact journals, books and create network with international collaborators. In this issue of UMR Bulletin, highlights on the 'History of IPPP' and 'Women Scientists in Academia; Current Issues, Facilitators, Barriers and Going Forward', also on the outstanding research works and achievements of our *iron lady scientists*.

Greatest appreciation to all articles contributors and members of the UMR Bulletin for their inputs and assistance in featuring very interesting articles especially those on 'Digitizing Mah Meri Masks: Preserving a Tradition for the future' a part of Orang Asli's culture, 'Naja Kaouthia; A Cobra with Variable Venom', and a special article entitled 'Remembering Susan Lim: Passion for Parasites'.

I welcome suggestions to improve our UMR Bulletin as a snapshots to our research activities in UM. All the best and happy new year 2017!

Thank you..

Assoc. Prof. Dr. Ngoh Gek Cheng
Director, Centre for Research Services

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The History of Institute of Research Management & Services, UM

Research management activities in UM started with the establishment of Sponsored Research Unit, which later developed into Research & Development Unit (R&D Unit) in 1995, with the main aim of managing research grants as well as financial payment. The UM Board of directors approved the university research governance five years later in October 2000 in its aspiration to develop into a premier research university in Malaysia. This governance addresses three main issues: the UM Research Council, the formation of Institute of Research Management and Consultancies, IPPP (from the previous R&D Unit) and the setting up of UM Research Fund. The primary function of IPPP is as a central coordination body for all research activities as well as a “one-stop” centre for all research information for the university. IPPP promotes, monitors and assesses research among researchers and provides consultancy services to various public and private agencies. There are a few centres within IPPP, each with its own mandate and functions, such as the research grants management, research services, consultancy, innovation and commercialization. Over the years, IPPP has undergone restructuring to meet the growing demands and development of research.

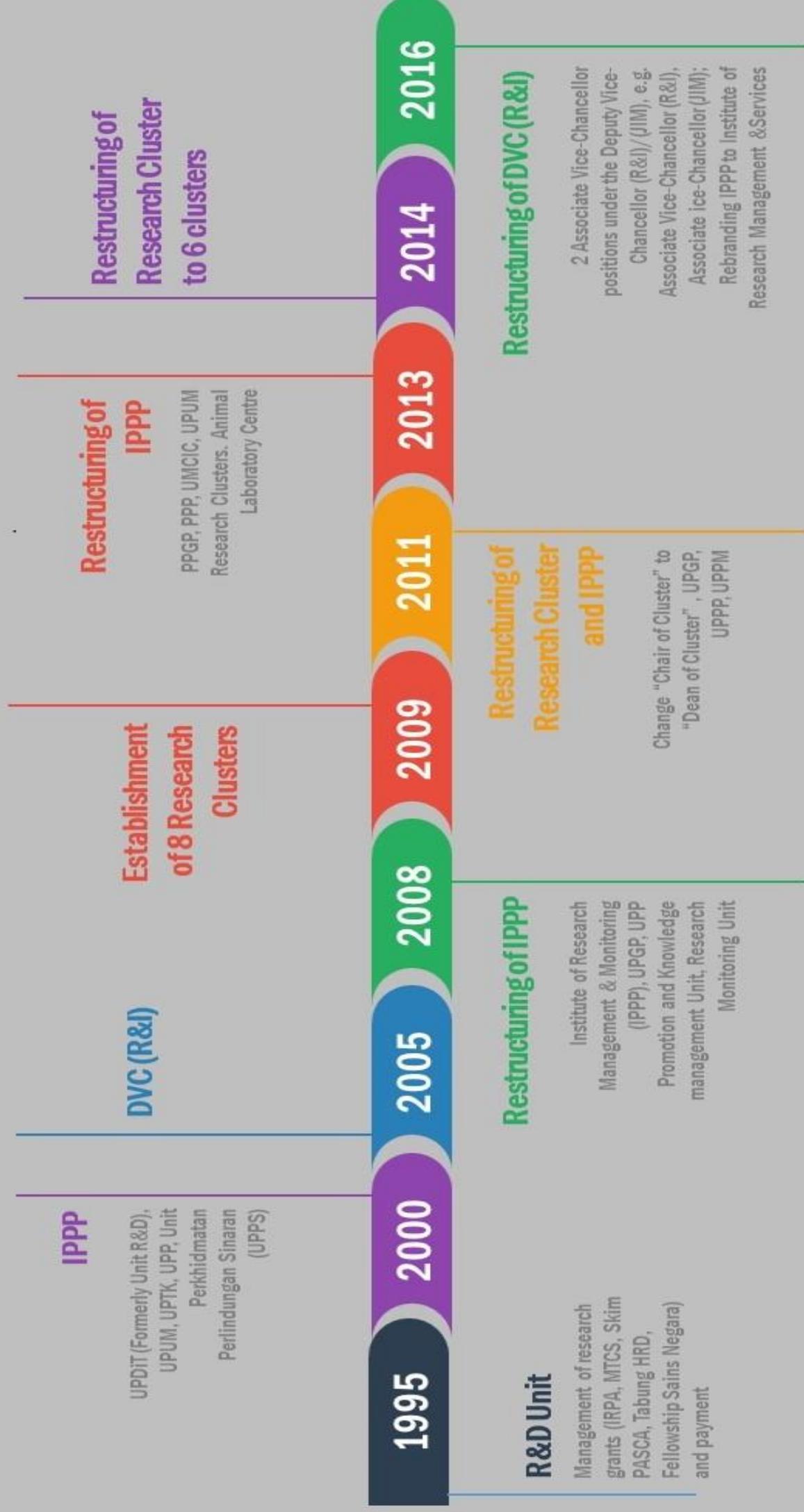
In the year 2009, eight Research Clusters were established to foster transdisciplinary research. Today, the transdisciplinary research in UM is organized under a big umbrella of six multi-disciplinary research clusters namely: frontier science, equitable society, innovative technology, sustainability science, wellness and humanities. Each research cluster embraces prominent and evolving themes in their respective research area. In addition, there are 54 research centres that provide opportunities for graduate research under renowned researchers in their respective fields and specialization. The research conducted by research centres are of high quality. Recognizing the impressive work accomplished and high achievement, several research centres have been upgraded to *Higher Institution Centre of Excellence* (HiCoEs) and UMCoes. Malaysian research universities hold a very promising future in establishing productive institutions.

As Malaysia’s premier Research University, University of Malaya will have even more activities, collaborations, partnerships and engagements to share and capitalize on leading edge research. The university plays a vital role in contributing to the Nation’s New Economic Model and the coveted developed country status in future.



The Research Management and Innovation Complex, University of Malaya, Kuala Lumpur, Malaysia.

The History of Institute of Research Management & Services, University of Malaya



Digitizing Mah Meri Masks: Preserving a Tradition for the Future

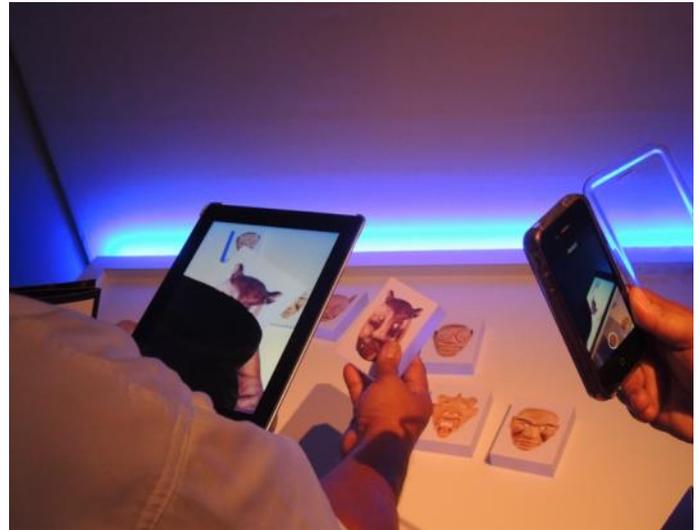
What started out as a chance meeting has bloomed into several digitisation projects to preserve Mah Meri masks. It all began in 2005 when I met Mr. Aziz Abdul Rashid, the Curator of UM's Museum of Asian Art. The museum then had 108 masks in their holding and they were just waiting to tell their story. What entailed later was not just the stories behind the masks but a giant leap into the innovative world of eCulture.

Since the first mini project to digitise Bharatanatyam dance movements in 2005, participation in research meetings with the Malaysian Research and Education Network (MYREN) has introduced me to similar networks including the Asia Pacific Advanced Network (APAN). In 2006 APAN's eCulture Working Group was ratified and this was mirrored by MYREN. This added a new layer to my background in TESOL and teaching about language and culture. In fact, the news about the masks was certainly a welcome challenge to do some preservation for the Museum.

The masks were slowly deteriorating with weevil holes and loose moveable mouth parts as some had been left to rot in the open air before they were retrieved. Some masks were in need of curative works then. They have been documented in black and white 2-D photographs but these did not capture the craft and the beauty of the wood. The next alternative would be to digitise them and for use by the UM's museum. Digitisation of the masks is an alternative form of documentation and to preserve them for future retrieval. This converts the physical format of the masks into an electronic format, that is, from the analog to digital format. This will help increase access and sharing across the globe to promote local culture and heritage.



Moyang Lumba mask.



Exhibition items of the Mah Meri Unmasked Exhibition.

Back then in 2005, technology was not as advanced, or at least it had not reached us here yet. With several colleagues from MDEC (Now IDEC) of University Putra Malaysia (UPM) Suhaimi Napis and Harun Jantrik, we tried out a 3D reconstruction of photographs of several Mah Meri masks as a proof of concept to announce the initiative at eCulture meetings in Japan and Korea. It was a slow start in Malaysia to initiate digital content.

It was not till 2011 that a project to digitise the Mah Meri masks took off in collaboration between UM and MMU's team, Khong Chee Weng and Muhammad Asyraf Mhd Pauzi. Together with it was another project to record stories about the masks. We successfully recorded 62 mask stories with carvers and storytellers, Kemi anak Kamis and Samri anak Abdul Rahman from Carey Island. We also recorded the oral tradition stories in the Mah Meri language.

While that oral tradition project was going on, another project on a polysensory exhibition of the Mah Meri masks was in the making with the Centre for Creative Content and Digital Innovation (CCCDI) headed by Harold Thwaites. From 20 Nov 2013 to 20 Dec 2013, a polysensory exhibition of the masks and their stories was held with over 1000 visitors in the three weeks it opened. Twenty-four selected masks were displayed in a glass room of the UM gallery. Here visitors read stories about each mask using the AR iPad application created by the CCCDI team. In the next room, visitors watched and listened to five selected stories in the Mah Meri language that were illustrated with animatics. Three HD videos played continuously – the Mah Meri people

and their culture of masks, mask-making by carvers Kemi and Samri and a 360-panoramic recording of the *Jo-oh* Dance. (For more details go to <https://mah-meri-unmasked.culturalspot.org/exhibit/MAJi5IGCJ2O9LQ?urlStub &position=3%3A33>)

Out of the 62 stories recorded, three were selected and converted into children's illustrated storybooks. These stories were written in Malay and English. In the pipeline is to first to reprint the three storybooks for the children of the Mah Meri community. It was due to limited resources that the intention to launch these books and present them at the primary school on Pulau Carey was held back.

Next, as these books have been digitised, they could now be made available online. These are the kind of efforts being encouraged by the e-Culture Working Groups of APAN and MYREN - to document and preserve culture using digital technology and ICT tools that include reaching out to the community with research output as the CSR engagement. In terms of heritage, it includes both the tangible such as artefacts like masks and the intangible such as storytelling and dance. The focus on cultural heritage is to document, preserve and disseminate digital content among communal networks and e-culture supporters, in particular youths to champion the cause.

Work to digitise information has been challenging in terms of resources, expertise and time. However, several other digitisation projects have sprung up since then – a *Mak Yong* proof of concept, the Indigenous Database and Mapping of the Orang Asli groups in



Moyang Tenung Ular Sawa mask.

Peninsular Malaysia and the Cultural Atlas of Pre-Independent Peninsular Malaysia, a sub-programme of Immortalising Cultural Heritage Programme.

Working on the oral tradition of the Mah Meri Masks has been an enriching experience. Together we need to join hands to conserve, preserve and promote our cultural heritage for generations to come. Each community should be given support to make their wish to preserve their heritage a reality, to be further enriched by their actions.



Kemi (left) and Samri (right) telling a story.

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Keeping Butterflies Fluttering in Malaysia

Most people's interactions with insects often elicit fear or disgust. This makes butterflies special among insects as they almost always elicit the opposite response, one of joy and admiration. People even pay to be able to get close to butterflies at butterfly parks and conservatories. The charisma, familiarity and popular appeal of butterflies have made them valuable ambassadors for insect conservation and for the promotion of public engagement with wildlife. However, 20-40% of the butterfly species in Southeast Asia are threatened with extinction due to land-use changes across the region, particularly deforestation and urbanisation.

A team at the Museum of Zoology, Institute of Biological Sciences, University of Malaya, are concerned by the threats to butterflies in Peninsular Malaysia, and have been conducting several projects aimed at documenting patterns of butterfly diversity in the rapidly changing environment of the region, and also, equally important, raising awareness of butterflies, and threats to wildlife generally, among the wider public.

Butterflies are thought to react rapidly to environmental change due to their short generation time and high mobility. Patterns of butterfly diversity are reflected in other distantly related taxonomic groups - other animals and plants - making them useful indicators of environmental change and degradation.

Raising public awareness of butterflies and wildlife threats

Citizen science is "on the rise" globally and can make valuable contributions to long-term biodiversity monitoring, but perhaps more importantly, involving the general public in science projects can raise public awareness and promote engagement. With the support



Butterfly in the park.

of UMCARES we conducted the first "butterfly count" in Peninsular Malaysia. Participants were asked to go outdoors on June 6, 2015, and (non-lethally) sample butterfly legs for species identification through DNA barcoding. Collectively the participants sampled 220 butterfly legs from 26 mostly urban and suburban sampling localities. These included UM campus, a high school, several public parks and private residences. Forty-three species of butterflies were sampled by the participants. The most sampled species was the Striped Albatross (*Appias oleria*) followed by the Peacock Pansy (*Junonia orithya*) and the Grass Blue (*Zizina otis*).

With the support of UMCARES we have also conducted the "School Butterfly Project". Five primary schools in five different states took part with about 30 school children (aged 9-12 years) from each school becoming involved in the project. A sixth group included home schooled children from the Kuala Lumpur area. In the first stage of the project we visited each school for an interactive training day. The training sessions covered butterfly sampling, making a homemade butterfly net, and how to take non-lethal butterfly DNA samples. We introduced scientific thinking during the sessions, building up to the research question: How will butterflies in Peninsular Malaysia be affected by global warming? Following the training sessions, the school children were provided with a sampling kit and tasked with collecting butterfly samples in their school yards or local parks four times over the next 12 months. Collectively the school children sampled 459 butterfly legs and 97 species of butterflies were sampled by the school children. Additional outreach activities have included a workshop on "Biodiversity, Butterflies & DNA barcoding" for first-year students at Tunku Abdul Rahman University College, Kuala Lumpur, and the production of



Butterfly Project at Melaka School.



Home school group.

three *Ypthima* DNA barcodes collected during the citizen science projects did not correspond to any species previously recorded in Peninsular Malaysia suggesting new species records for the region.

The lack of rare species recorded in our studies emphasises the importance of undisturbed forest habitat for local butterflies. In order to promote butterfly diversity in urban and suburban Peninsular Malaysia, park managers and land owners should set aside areas as unmanaged, semi-natural areas. Where management is necessary a diverse planting scheme of native flowers is best for butterflies.

Original sources

a pocket guide to the butterflies of Langkawi, printed by UM Press.

Butterflies in Kuala Lumpur

Since 1990, the Federal Territory of Kuala Lumpur has seen an 87% loss in green land, a 77% increase in the human population, and rapid urban sprawl across the outlying Klang Valley. To understand how well KL city parks can function as refuges for butterflies, our team surveyed butterflies at ten parks across KL. The study also examined the effects of park age and park size on butterfly diversity. Sixty species were recorded across the KL parks. The lack of rare species in KL parks, which is similar to findings from Singapore and Hong Kong, indicates tropical city parks are poor substitutes to natural habitat for maintaining populations of rare butterflies. The study also discovered that more butterfly species are found in larger parks and in older parks. Within the parks, the highest number of butterfly species was found at wild sites, those with less intensive management.

Butterfly diversity and conservation

More than 1,000 species of butterflies are found in Peninsular Malaysia, but less than 10% of the species were sampled throughout our projects. Almost all the butterflies we recorded were widely distributed, common species suggesting that species with broad geographical distributions are more likely to survive in cities and suburban areas.

One butterfly that dominated most of the sampled habitats was the Tawny Coster (*Acraea violae*). Native to India, the Tawny Coster was first recorded in Peninsular Malaysia in 1992. The recent range expansion, reaching Australia in 2012, may be a response to climate change or habitat degradation. The *Ypthima* group of butterflies, known as the "rings", were also common in the sampled habitats. Interestingly,

1. Jisming-See SW, Sing KW, Wilson JJ. DNA barcodes and citizen science provoke a diversity reappraisal for the ring butterflies of peninsular Malaysia (*Ypthima*: Satyrinae: Nymphalidae: Lepidoptera). Genome DOI: 10.1139/gen-2015-0156 (2016).
2. Sing KW, Jusoh WFAW, Hashim NR, Wilson JJ. Urban parks: refuges for tropical butterflies in Southeast Asia? Urban Ecosystems DOI: 10.1007/s11252-016-0542-4 (2016).
3. Wilson JJ, Jisming-See SW, Brandon-Mong GJ, Lim AH, Lim VC, Lee PS, Sing KW. Citizen science: The first Peninsular Malaysia butterfly count. Biodiversity Data Journal 3: e7159 DOI: 10.3897/BDJ.3.e7159 (2015).
4. Jisming-See SW, Brandon-Mong GJ, Guo YZ, Lee PS, Sing KW, Wilson JJ. The school butterfly project Malaysia. Barcode Bulletin: The Newsletter of the International Barcode of Life 6(1): 2-3 (2015).
5. http://www.tarc.edu.my/fasc/newsEvents/latest/img/Write%20up_Biodiversity,%20Butterflies%20&%20DNA%20barcoding%20Workshop.pdf

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Passion for Parasites: The Life and Times of Susan Lim

Professor Dr. Susan Lim Lee Hong who died aged 62 in 2014, was an outstanding monogenean taxonomist and fish parasitologist from the University of Malaya. A large number of the monogenean species in South East Asia have become known to humanity as a result of her research efforts and joint work with world-class collaborators from France, the United Kingdom, Canada, Singapore, Australia and South Africa. Her untimely passing at the peak of her career was a tremendous loss to science.

In 1971, Susan (as she was fondly known among colleagues and students) joined UM to read zoology, and worked as a tutor after graduating with an honours degree. She began her PhD study under the supervision of Dr. J.I.R. Furtado in 1980, to study the distribution and diversity of monogeneans in freshwater fishes in Peninsular Malaysia. Opportunities to engage eminent fish parasitologists and monogenean taxonomists such as Dr. Kálmán Molnár, Dr. Oleg Bauer and Dr. A.V. Gussev, cemented her life-long love affair with the monogeneans, whose beauty and secrets only yield under the microscope. In 1987 she completed her PhD study and became a staff member at the university. She received her professorship in 2003, and led the Fish Parasitology laboratory and the Environment and Molecular Parasitology laboratory at the IPPP building until her death, where most of her work was done. In 2006, Susan was elected as a member of the International Commission on Zoological Nomenclature, an international body that regulates the system that provides unique, universally accepted scientific names to every animal on earth. To date, she is the only Malaysian taxonomist ever admitted to this prestigious body. Susan was a core member of the Sustainability



Prof. Dr. Susan Lim (third from right) among peers at the 2nd International Symposium on Monogenea in Montpellier, France (1993).

Photo credit: George Liew.

Science (SuSci) Cluster, and received numerous grants from the university to study her beloved parasites.

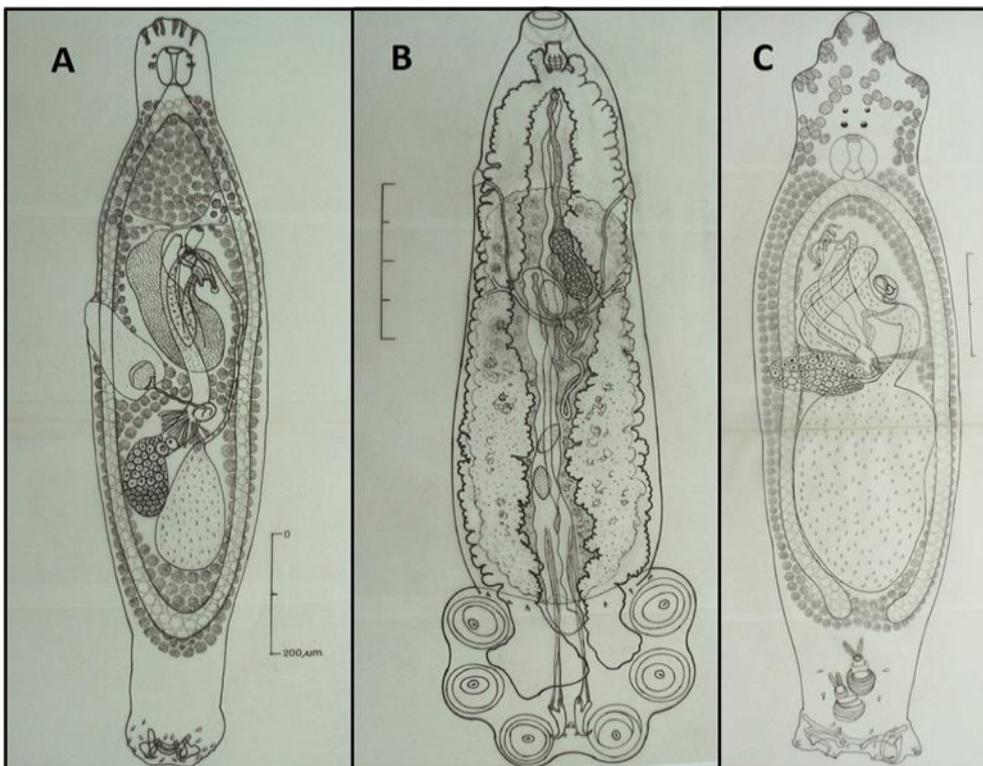
Susan contributed immensely to the systematics and biodiversity inventory of monogeneans in South East Asia. She discovered and described over 200 species of monogeneans, setting a high bar that is unlikely to be surpassed. The monogeneans that she discovered spanned diverse animal groups, ranging from fish to frogs and turtles. Ever sensitive to the historical and cultural significance that species names carry, she erected genera and named new species after special locations and respected personalities. She created the new genus *Sundapolystoma*, after the Sunda continental shelf, for polystome parasites found in frogs. Paying tribute to the Russian taxonomist A.V. Gussev who inspired her work, she named a new species, *Bravohollisia gussevi*, after him. Two species, *Cabellaria liewi* and *Ligophorus liewi*, were named after her husband and co-worker George Liew, a skilled laboratory technician who accompanied her on sampling trips and assisted with slide preparations.

A gifted artist, Susan had an uncanny ability to note anatomical details that elude most people. Because of this, she was primed to excel in taxonomy, an art where great attention to detail is needed since new and existing species are identified on the basis of morphological variation. A large collection of her hand drawings in ink spanning the period from 1985-2003 (digital drawings took over after 2003) is currently undergoing curation, and will be archived permanently in the university library as part of the research heritage of UM.



Prof. Dr. Susan Lim Lost in thoughts (2009).

Photo credit: Benjamin Ong Jia Ming.



A selection of Susan Lim's composite illustrations.

- A) *Pseudohaliotrema falcata* Lim, 2002;
- B) *Sundapolystoma chalconotae* Lim & Du Preez, 2001;
- C) *Calydiscoides scolopsidis* Lim, 2003.

Photo credit: Tan Wooi Boon.

Susan's robust, old school supervision style meant that students were driven very hard for excellence. Those who were fortunate to 'survive' the ordeals of a PhD study under her supervision are respected in the circle of monogenean biologists simply for their perseverance, if not for the quality of their research work. Susan's first and only foreign PhD student was Dr. Theerawoot Lerssuthichawal, who graduated in 1999 and returned to Thailand to set up a fish disease group. Dr. Wong Wey Lim (2009 graduate), who worked on bioadhesive secretions from the monogenean anchors, went on to secure the prestigious Alexander Humboldt Scholarship for a postdoctoral study in Kiel University, Germany. He currently chairs the Centre for Biodiversity Research at Universiti Tunku Abdul Rahman at Kampar. Both Dr. Tan Wooi Boon (2013 graduate) and Dr. Michelle Soo (2015 graduate) discovered and described numerous new monogenean species, and produced the high quality geometric morphometric data and molecular sequence data that culminated in the recent 45-page PeerJ paper (2016) describing the systematic value, phylogenetic signal and evolution of monogenean anchors.

Two obituaries in 2014, one published by her colleagues Dr. Stephen Ambu and Dr. Indra Vythilingam in Tropical Biomedicine (Malaysian Society for Parasitology and Tropical Hygiene), and another by her long-time collaborators Dr. David Ian Gibson and Dr. Peter Ng Kee Lin in the Bulletin of Zoological Nomenclature, testified to her stature among peers. Just last year, grateful colleagues erected a new genus

- *Susanlimae*, for a monogenean species found on the Sumatran catfish. Susan's tenacity to pursue her passion was legendary, as she battled her illness to complete her last taxonomic paper (published in 2015), describing the new genus *Teraplectanum* from the banded grunter fish to the world. In the age of 'publish or perish', her integrity and uncompromising commitment to the quality of publications, not quantity, set high standards for her intellectual equals and progenies to follow.

Susan Lim is survived by her husband George Liew, her daughter Mei Wern, who is a software engineer, and her son Jien Wei, who is a financial executive. Susan Lim Lee Hong, monogenean taxonomist and parasitologist, born 14 February 1952; died 2 August 2014.

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Emerging Crisis in Men's Health

Globally, men live shorter than women by five years and have a higher chance of getting and dying from heart problems, cancers, injuries and suicides. In Malaysia, while women live till 77 years old, most men would only live till 72 years old. This is despite men being in a more privileged position compared to women in terms of education, employment and income. This gender gap may be explained partly by biological differences; but more importantly, men are more likely to smoke and drink, delay in seeking help when they are ill, and take risks when it comes to their health. In addition, the current health care services focus on improving women's health; men's health is not on the health agenda of most countries in the world.

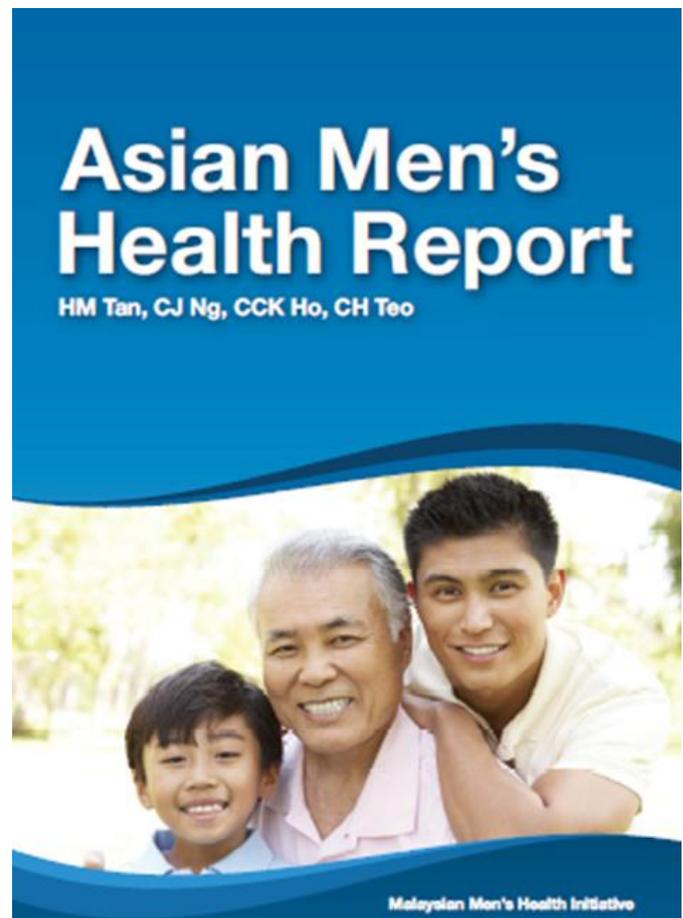
Recognising the urgent need to tackle the emerging men's health crisis, a group of concerned clinicians and researchers from the Department of Primary Care Medicine, Faculty of Medicine, set up the 'University of Malaya Men's Health Research' Group (UMMHR) to promote men's health through research, teaching, clinical services, public campaigns and policy Development.

Status of men's health in Asia: <http://www.sciencedirect.com/science/article/pii/S0091743514002977>

University of Malaya Men's Health Research:
<http://menshealth.um.edu.my>

Research

UMMHR conducts both quantitative and qualitative studies, ranging from surveys, interviews, systematic reviews and secondary data analysis, to provide evidence for clinicians and policymakers to make informed decisions. So far, the UMMHR, in collaboration with the Malaysian Society of Andrology and the Study of the Aging Male, has published the first Asian Men's Health Report. The report not only confirmed the health discrepancy between men and women, it highlighted the lack of men's health policies and programmes in the region, including Malaysia. This has led to the inaugural Men's Health Stakeholder Meeting for Men's Health in 2015, where key opinion leaders from the Ministry of Health (MOH), universities and NGOs met and agreed on the need for definitive actions to improve men's health in Malaysia. As a result, MOH has initiated and conducted several plan of action meetings with the ultimate aim to develop a national men's health policy.



First Asian Men's Health Report.

Besides supporting policymaking, the group is also actively conducting men's health research focusing on different target groups. Currently, there are three ongoing projects which aim to answer important research questions on men's health:

1. How do men interact with doctors in a clinical consultation? *The Gender Match and Mismatch (GeMM) Study*
2. Does a health screening mobile application improve screening uptake in hard-to-reach men? *The ScreenMen Study*
3. How useful is a Global Men's Health Index in measuring men's health status of a country?

By finding the answers to these questions, we hope to find solutions to tackle men's health problems by: providing guidelines to doctors to improve their communication with male patients; using ICT to reach out to men in the community; and developing a tool to help policymakers monitor men's health in the country.

Asian Men's Health Report: <http://repository.um.edu.my/33861/>

UMMHR research projects: <http://menshealth.um.edu.my/?modul=Research>

Teaching

To keep abreast of new advances in men's health, UMMHR conducts regular lunch-time Journal Club where the group discuss and debate men's health 'hot topics', brainstorm research ideas and plan for men's health promotion activities. Members of the UMMHR also train medical students and Masters trainees in Family Medicine on clinical issues related to men's health, such as screening, sexual health and communication with men.

Men's Health Journal Club:

http://menshealth.um.edu.my/?modul=Activities&pilihan=Journal_Club

Moustache for Men (M4M) Public Campaign

In conjunction with November and International Men's Day, UMMHR organised the inaugural 'Moustache for Men' (M4M) Campaign to promote public awareness on men's health at the University of Malaya Medical Centre in 2015. The public had the chance to view posters on wide-ranging topics such as cardiovascular diseases, cancers, lifestyle, erectile dysfunction, depression and injuries. There was also free health screening day for men where more than 200 men were screened for common men's health conditions and 1500 pamphlets were distributed during the campaign.

M4M Campaign:

http://menshealth.um.edu.my/?modul=Activities&pilihan=Moustache_for_Men

M4M health posters:

http://menshealth.um.edu.my/?modul=Health_Info&pilihan=Health_Posters

Malaysian Clearinghouse for Men's Health

UMMHR is honoured to initiate and host the Malaysian Clearinghouse for Men's Health (MCMH), which is a one-stop centre that provides information on men's health activities in Malaysia. It aims to promote men's health in Malaysia by collating, analyzing and disseminating information about research, education, clinical services, and public activities on men's health in Malaysia. This is an attempt by UMMHR to collaborate with men's health

stakeholders in Malaysia to promote men's health in Malaysia. Find out more about MCMH at: <http://menshealthmalaysia.org>

We strongly believe that the aim of research should go beyond creating new knowledge; it must have a significant impact on humankind and society as a whole. UMMHR hopes to achieve this.

UMMHR welcomes you to join us at our regular Journal Club meetings. You can find out more about the UMMHR at <http://menshealth.um.edu.my> or email us at: ngcj@um.edu.my.



Men's Health Stakeholders' Meeting, FOM, March 2015.

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SmartDhesionPE: Smart Adhesion Polymer Electrolyte for Electrical Energy Development

Polymer is a substance that consists of large molecules or macromolecules comprising a huge number of repeating units. Polymers can range from synthetic plastics such as water bottles to natural biopolymers which can be found in our body such as DNA and proteins. These polymers are formed by a vast number of monomers that undergo a phenomenon called polymerization. Polymers with high molecular mass relative to small molecule compounds could create a lot of unique properties, including toughness, conducting abilities and viscoelasticity.

Polymers have attracted a huge amount of attention among researchers and inventors since they are widely used in numerous types of industrial applications such as plastics, pharmaceutical products and electro-chemical devices. In the application of electronic devices, the polymers are used as separators, functioning as a solid electrolyte membrane. In the near future, these solid polymer electrolytes are expected to replace the conventional liquid electrolyte due to its dimensional stability, processability, flexibility, and safety. Solid polymer electrolyte can even be rolled and folded according to packaging designs.

SmartDhesionPE, our material of interest, is a solid polymer electrolyte (SPE) formulated with a co-polymer called poly (methyl methacrylate-co-butyl acrylate-co-acrylic acid) doped with *lithium trifluoromethanesulfonate* which acts as the mobile ions provider. Co-polymer is a type of polymer that has two or more



Electrochemical applications that can be produced by using SmartDhesionPE.

different types of monomers joined together in a same polymer chain. Co-polymer displays characteristics as an excellent candidate for polymer electrolyte material in electrochemical applications as it satisfies at once the two contradicting properties of high ionic conductivity and good mechanical strength. Deep eutectic solvent (DES) is another material that we have added into the solid polymer electrolyte to further enhance the ionic conductivity. DES is composed of a quaternary ammonium salt and a hydrogen bond donor. In SmartDhesionPE, our DES was synthesized from a mixture of choline chloride and urea. Choline chloride is a common supplement to poultry feed and urea is widely used in fertilizers as a source of nitrogen and is an important raw material for the chemical industry. Other advantages of DES include non-toxicity, green to environment and biodegradability.

Among the differences between SmartDhesionPE and other commercially available polymer electrolytes are the additional unique adhesion ability and elastic properties. The adhesiveness of our solid polymer electrolyte improves the contact between the electrode-electrolyte interfaces of the electrochemical devices, in the absence of any free flowing liquid, which can be harmful if it leaks from the casing. Good interfacial contact is a crucial factor that needs to be achieved in any electrochemical devices as it could facilitate a free flow of charge carrier ions through the polymer



SmartDhesionPE - environmentally friendly, cost efficient and having safety properties.

membranes which could further improve the efficiency of any electrochemical devices. Our solid polymer electrolyte also has a special property called the thermal shutdown capability, whereby the contact between electrode-electrolyte is terminated upon exceeding temperature of 50°C as the solid polymer electrolyte loses its adhesion property. This potentially improves the safety of the electrochemical applications and it might be one of the solutions to solve unfortunate cases such as the explosion of lithium batteries. Apart from being adhesive, our solid polymer electrolytes exhibit excellent elastic properties. Our studies show that SmartDhesionPE was able to elongate up to 200% from its original length upon stretching. By having highly elastic properties, more complicated designs could be easily achieved now. The elasticity of the solid polymer electrolyte is also important in improving the efficiency of the electrochemical devices. A thinner polymer electrolyte with narrow separating space between the electrode-electrolyte interface allows high passage of free mobile ions through the separating polymer electrolyte.

SmartDhesionPE has a very strong commercialization potential. By having the unique properties mentioned previously (e.g., adhesive properties, mechanical elastics, safety properties), our product managed to capture the attention of two well-known companies for collaboration. The SmartDhesionPE has also been fabricated into an electrical double layer capacitor (EDLC) and compared with a product of a leading super-capacitor manufacturer. The SmartDhesionPE-based EDLC boasts a power density of 60,000 W/kg which is much higher than the range of our competitor which has around 2,400 W/kg to 14,000 W/kg. SmartDhesionPE can also be fabricated into other electrochemical devices and is very feasible. With some simple changes in the additives added into the solid polymer electrolytes, the function of the SmartDhesionPE can be varied. For example, by changing the lithium salts into iodide salts and adding iodine into the SPE, the new SmartDhesionPE can now be used for the fabrication of the dye sensitized solar cells (DSSCs).



Conventional liquid electrolytes are toxic and not environmentally friendly.

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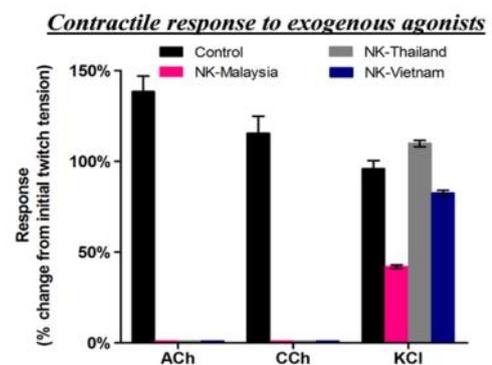
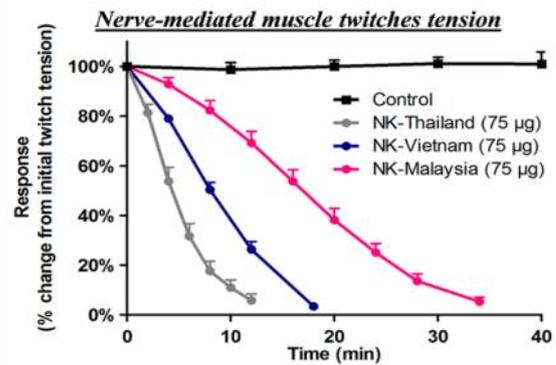
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Naja kaouthia: A Cobra Species with Variable Venom

The monocled cobra, *Naja kaouthia*, is a medically important venomous snake in the region. Through proteomics (technology that globally profiles the composition of protein mixtures), we have shown that *Naja kaouthia* from Malaysia (NK-Malaysia), Thailand (NK-Thailand) and Vietnam (NK-Vietnam) have remarkable differences in their venoms, in particular the content of the lethal principles, neurotoxins. The geographical variability of snake venom as such poses a challenge on the production of effective antivenom. We recently followed up on the geographical venom variation of *N. kaouthia* on the functional and practical aspects. The main lethal components in cobra venom are typically alpha-neurotoxins which act by blocking nicotinic receptors of skeletal muscle, thereby interfering normal neurotransmission that is essential for muscle contraction to produce movement – including breathing.

To investigate the neurotoxic activity of the venom, we first established a nerve-muscle model using chick *biventer-cervicis* in an organ bath set-up, simulating the neurotransmitting event between nerve ending and skeletal muscle. The nerve was continuously stimulated to release the neurotransmitter acetylcholine to elicit uninterrupted series of muscle contraction and relaxation, measured as “twitch tension”.

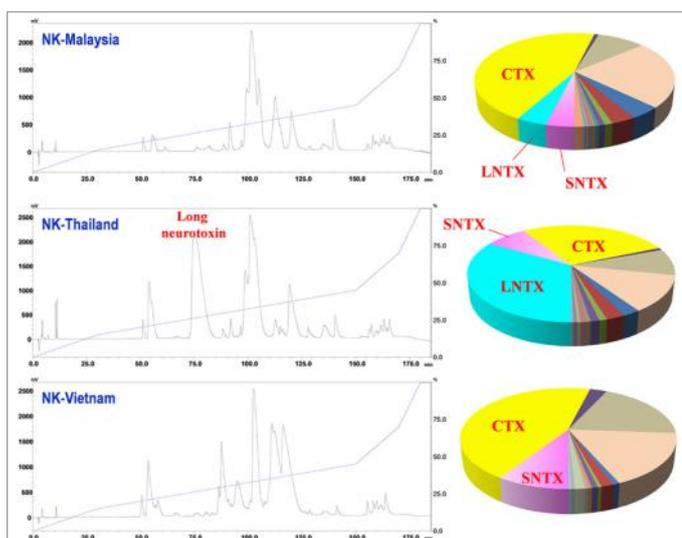
Upon the addition of *N. kaouthia* venom, the muscle



Upper panel: *N. kaouthia* venom from Thailand caused the fastest depression of muscle twitches (effect of neuro-muscular blockade);

Lower panel: Acetylcholine and carbachol failed to reverse venom-induced neuromuscular blockade.

twitches were abolished over time, indicating neuromuscular blockade. This imitates the mechanism of paralysis observed in subjects of cobra envenomation. It is also worth-noting that potent agonists such as acetyl-choline and carbachol could not reverse the blockade when added into the organ bath, implying that the neurotoxins bound with very strong affinity to the nicotinic receptors. At the same venom concentration, NK-Thailand venom produced the fastest neuromuscular blockade, followed by NK-Vietnam and NK-Malaysia. Following that, the addition of high concentration potassium chloride (KCl, a membrane stimulator that elicits muscle cell contraction independent of nicotinic receptor activation) upon the complete neuromuscular blockade restored the twitches but to different extents, with NK-Malaysia preparation being the least responsive. This is reflective of the stronger cytotoxic effect of NK-Malaysia venom that contains more *Cytotoxins*.



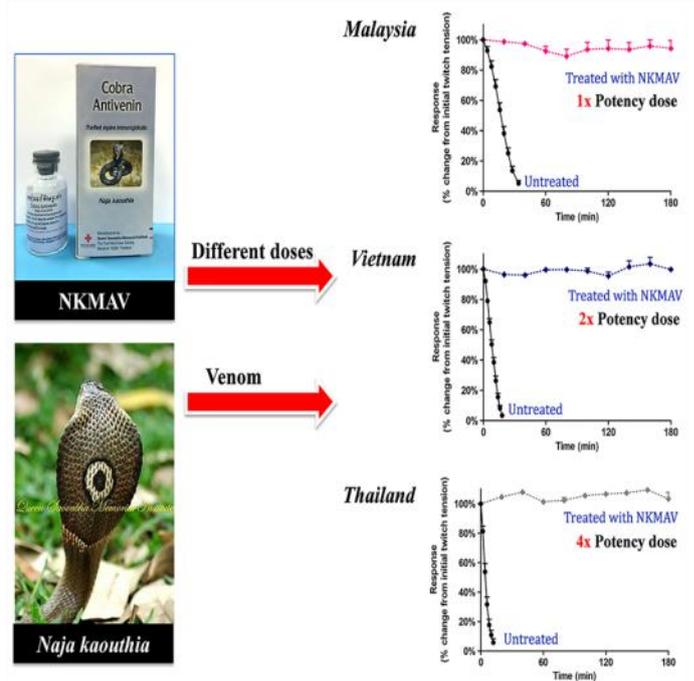
High performance liquid chromatography of the venoms of *Naja kaouthia* from different locales (Malaysia, Thailand, Vietnam). (LNTX: Long neurotoxin; SNTX: Short neurotoxin; CTX: Cytotoxin)

The findings correlate well with the venom proteomes, and confirmed the major differences of *N. kaouthia*

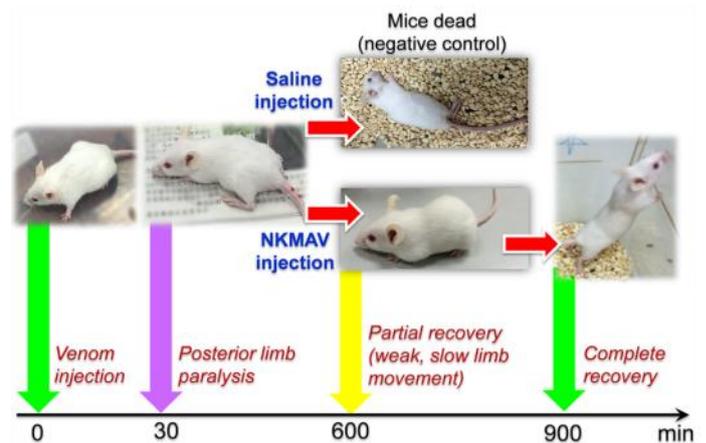
venoms from different geographical locales. In brief, NK-Thailand venom has the most abundant alpha-neurotoxins judging from the fastest onset of neuromuscular blockade, while NK-Malaysia venom contains the most tissue-damaging cytotoxins, evidenced by the poor response of the muscle tissue to KCl stimulation.

N. kaouthia Monovalent Antivenom (NKMAV), the antidote for treatment of *N. kaouthia* envenomation, is produced in Thailand. However, the remarkable proteomic and mechanistic differences among the venoms of different locales could potentially affect the effectiveness of this antivenom when used outside Thailand. We showed that the efficacy of NKMAV against neuromuscular blockade varied according to the geographical sources of the venom, where the NK-Thailand venom required the largest antivenom dose to maintain the optimal muscle twitches due to the higher content of neurotoxins in the venom. In another experiment, after muscle twitches started to show deterioration. NKMAV added at this juncture could only halt the progression of the neuromuscular blockade but failed to fully restore the original contraction of the Muscle. This is consistent with the fact that antivenom could bind free neurotoxins in the organ bath, but toxins which already bound to nicotinic receptors remained unaffected. The findings highlight the urgency of early antivenom administration to sequester as much circulating neurotoxins as possible when treating cobra envenomation.

Nonetheless, in clinical setting, antivenom is only recommended when there is onset of envenoming sign (typically ptosis i.e. drooping of eyelids). Thus, we further assessed the efficacy of NKMAV against the venoms of different locales using a mouse model, mimicking real envenomation. Laboratory mice were experimentally injected with the respective venom; upon the early sign of paralysis in mice (inability to move hind limbs), a standard dose of NKMAV was administered intravenously for "rescue". The mice envenomed with NK-Malaysia and NK-Vietnam venoms recovered fully by 3-4 hours post-treatment, but those paralyzed by NK-Thailand venom took the longest time (12-15 hours) to achieve full recovery (where they were able to move freely and feed). This *in vivo* observation validates the proteomic and *in vitro* findings of extremely neurotoxic venom of NK-Thailand. It also implies the need for meticulous post-antivenom monitoring for repeated dosing of antivenom if indicated.



Naja kaouthia venom of Thailand required the largest dose of antivenom to sustain the optimal muscle twitches.
(NKMAV: *Naja kaouthia* Monovalent Antivenom)



In vivo evidence showing the slow recovery from neuromuscular paralysis in mice envenomed with the venom of Thai *N. kaouthia*, containing the highest amount of neurotoxins compared to Malaysian and Vietnamese species.

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Novel Cultivation and *In-Vivo* Flowering of Saffron (*Crocus Sativus* L.) in Malaysia

The introduction of *Crocus Sativus* L. or Saffron in Malaysia is a highly novel idea, strongly encouraged and recommended, since it is a unique crop with high potential for commercialization. Considered as 'red gold' in the world, saffron is a monocot plant, having purple flowers with fragrant smell and grass-like leaves. The famous spice is obtained from the dry stigmas of the saffron flowers.

This species can be found abundant in West Asia countries especially in Iran (90%) but not in Southeast Asia. Due to its high-medicinal values and attractive red colour, Malaysia has to import a great deal of saffron to fulfil the market demands. Despite the expensive price of saffron which is around RM 28,000 – RM 32,000 per kg, this 'red gold' has been highly appreciated since ancient times as it has been used in traditional dishes, fragrance, dye and herbal medicine. In addition to the pleasant and strong aromatic odour, saffron also gives natural yellow to red colour to the cooked rice, pudding,

ice-cream, sweet, cheese and many more dishes. Saffron is rich in carotenoids such as zeaxanthin, lycopene, β -carotenes, crocin and crocetin. In addition, saffron has been reported to enhance the memory performance, with the properties of anti-oxidant, anti-depressant and anti-cancer. Nowadays, many food and health supplement products are added with saffron in order to enhance their quality and health benefits. In Malaysia, this crop is a new potential for commercialization due to its popularity.

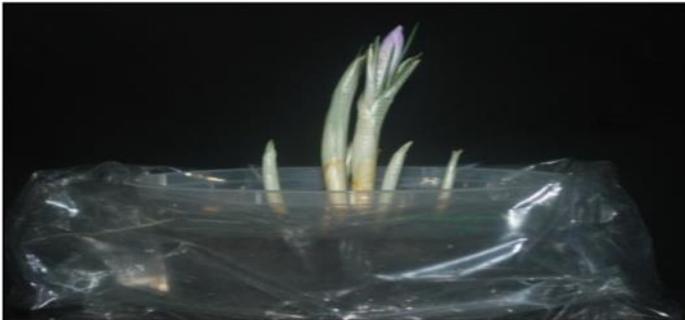
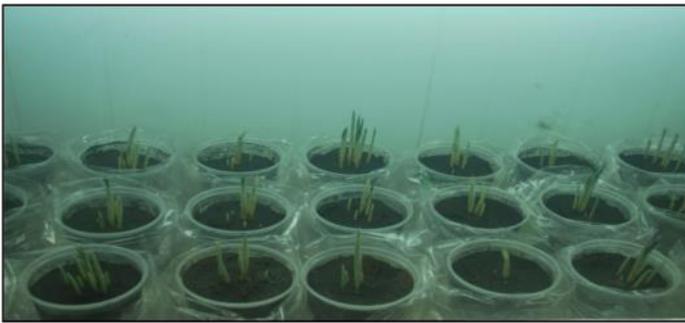
The flower of saffron cannot be fertilized. It does not produce seed, but reproduces through corms until today. The daughter corms develop from a mother corm in which the corm serves as a storage organ for their growth. On average, a corm usually produces two to four flowers with three stigmas for each flower. The slow growth of saffron plant and limited daughter corms produced are among the challenges of its cultivation. In saffron producing countries, the life cycle of saffron depends on the seasons. Saffron will flower during autumn instead of spring and the flower blossoms in a short time for about a week. Among factors that could influence the ability of the corms to flower which in turn also account for good production of the spice are temperatures, corm size, water stress and soil nutrient content.

Decrement in saffron cultivation areas has been observed in Spain, Greece, Italy and India due to the high cost and requirement of manual labour. In Kashmir, pressure due to increased urbanization of land on which saffron grows also contributes towards the decline of the saffron industry. Moreover, due to some disadvantages of traditional cultivation such as being attacked by corm-rot disease, plant parasitic nematodes and pests, growing and flowering of saffron in controlled environment such as in the culture room and green-house have become good alternatives to solve the existing problems. This work is also economical as it could hinder pest attack, avoid usage of pesticide, maintain the cleanliness and reduce labour, energy and costs during harvesting. Since the price of this spice is so expensive, cultivating saffron in Malaysia can reduce the cost and open a new opportunity for commercialization of a novel agricultural commodity.



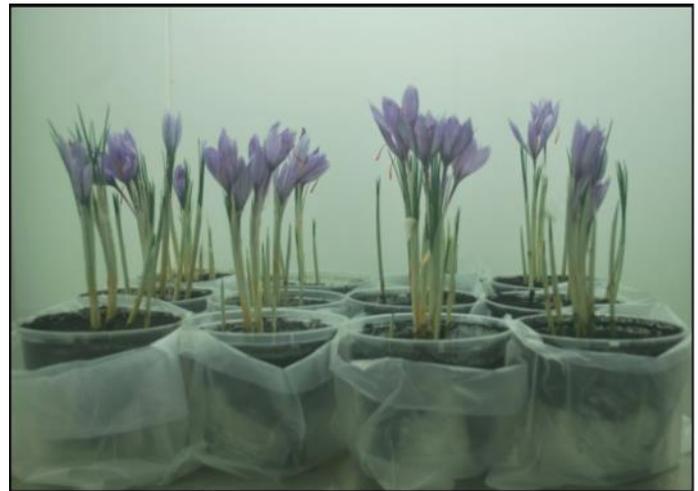
Top : Saffron corms in dormant stage with tunic.

Bottom: Different corms sprouting depending on the subjected pre-treatment.



Top : Saffron seedlings in vegetative stage.

Bottom: Flower buds initiated from the apical shoot.



In vivo flowering of saffron in the controlled-room condition.



Fully-opened saffron flowers with three red stigmas and yellow stamens at the centre.

This is the first successful attempt of saffron cultivation in Malaysia since the flowering of saffron in Malaysia has never been reported before. So far, after some pre-treatment to the corms, saffron plants grow best in black soil at 16 °C which produced 100% flowering after 57 days. During initiation of the flower, the flower bud was enclosed and protected by cataphylls. Over time, the bud emerged from the cataphylls and blossomed into a mature flower having five to six violet petals, three brightly red stigmas and three yellow stamens. Inappropriate intervention or disturbance in the flowering temperature will retard the flower formation and sometimes prevent its growth. Identification of the chemical composition of soils revealed that Malaysian black soil has major nutrients approximately equal to that of the Iranian soil which supports the plant growth. The shape, scent and flower sizes are comparable to those produced in temperate countries.

This research was funded by the University of Malaya Research Grant (UMRG-RP024A-14AFR, from Frontier Science Cluster). To date, it has been awarded a silver medal at the iCompEx 2015 competition in Jitra, Kedah and a gold medal during the 2nd World Invention Innovation Contest (WiC) 2016 in Seoul, South Korea.

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Women Scientists in Academia: Current Issues, Facilitators, Barriers and Going Forward

Current issues

In the developing world, there is a problem of underrepresentation of women in Science and Technology (S&T) and women are continually striving to maintain a presence in terms of participation in S&T fields. Contemporary gender discrimination within universities is part reality and part perception. Social identity threat or what is known as gender-stereotyping is believed to affect women's performance. In Malaysia today, the gender parity index score in most institutions of higher learning shows a gender gap in enrollment favouring more girls than boys in recent times, not as a result of policy, but due to gender choices in selecting a course of study. This is a drastic reversal compared to the 1990s where female undergraduates were less than 20% of student population. These days, more females than males are keen in pursuing S&T courses.

Data from the Ministry of Higher Education reveals that women in Malaysia outnumber men in science related fields, computer and mathematics. This gender disparity is highest in fields like education, health and welfare. However, men still dominate in engineering, manufacturing, and construction. Interestingly, women in Malaysia are more represented in this field in comparison to many developed nations. For instance, 45% of engineering undergraduates in Malaysia are female, as against 17% in the United States.

Given this, there is inarguably a higher representation of female presence in the labour force, yet a fewer representation of women in top management positions, especially in academia, more importantly in S&T domains. Although women thrive in S&T research and excel at all levels, there is still a growing concern about the fewness of women in senior management positions within Malaysian public universities.

We interviewed a few top notch outstanding female scientists in Malaysian public universities and explored both the implicit and explicit social identity threats within the scientific academic work environments in relation to women scientists'

“women in Malaysia are more represented in this field in comparison to many developed nations. For instance, 45% of engineering undergraduates in Malaysia are female, as against 17% in the United States”

perception of their position in the scientific domain and possibilities of scaling through the glass-ceiling effects on their career salience.

Facilitators

To shed light on how women excel in the years of working in the field of science, and to illustrate the contributing factors, the top women scientists in the study shared several similar characteristics that helped facilitate their success in the field of science. Most of them believed that individual traits play an important role in coping with challenging situations. Some of these include positive attitude, time management, non-stereotypical beliefs, multi-tasking, leadership skills, strategic planning in early professional life, and passion for the choice of career as facilitators to women's career success in S&T.

“individual traits play an important role in coping with challenging situations. Some of these include positive attitude, time management, non-stereotypical beliefs, multi-tasking, leadership skills, strategic planning in early professional life, and passion for the choice of career as facilitators to women's career success in S&T”

“in order to empower and retain women scientists in academia, it is recommended that non-stereotypical beliefs should be imparted through early childhood upbringing by parents and teachers and that structured mentor-mentee system should be put in place, including recognition of gender differences in the workplace, equal playing ground for both genders, and means of dealing with family-work role conflict”

Barriers

Even though women encounter certain levels of stumbling blocks as they strive to balance career with family demands, this does not deter them from accomplishing great feats in the scientific domains. Current situation analysis reveals that a number of major barriers inhibit women from actively getting involved in S&T fields. We found factors like cultural–gender stereotyping, family-work role conflict and organizational factors like perceived boy’s club, male dominant management, and odd meeting times as some of the issues faced by successful female academics in S&T in Malaysia. In addition, the existence of glass ceiling barriers was noted as subtle informal gendered practices that hinder the process of promotion for women.

Going forward

There is a need to emphasize the importance of empowering and affirming women in S&T. Most of our study participants, irrespective of the socioeconomic level of their family of origin, stated that they have been motivated by their fathers in pursuing S&T careers. In the cultural context of Malaysia, the role of fathers in decision-making within the family cannot be over emphasized. His attitude and perception about education for female children are very significant in providing opportunities for women’s development. In addition, childhood exposure to science phenomenon goes a long way in inspiring a girl child to choose science stream in high school, as well as continuing with the science programme for university education.

During the years of gaining career tenure, some other factors that help women to cope better include social support from family and significant others, especially with spousal and fatherly motivation. Within work organizations, provision of flexi-time, nursery/day-care, and recognition of gender issues (e.g., scheduling meetings at odd times), opportunities (funding, working environment, laboratory space, promotion, and training). Since science is considered a process that includes a system of communication, interaction and exchange opportunities for continuous collaborations are important factors that facilitate academic achievements in science research projects, especially in the early years of career development.

What’s New?

Malaysian women scientists in academia believe that women have contributed mainly to the development of the country in different aspects, including the field of science, and the number of women in this field is rapidly increasing. Even though the higher leadership positions have been mostly occupied by men, the trend is changing. There are now more female faculties than male in academics.

In conclusion, in order to empower and retain women scientists in academia, it is recommended that non-stereotypical beliefs should be imparted through early childhood upbringing by parents and teachers and that structured mentor-mentee system should be put in place, including recognition of gender differences in the workplace, equal playing ground for both genders, and means of dealing with family-work role conflict (i.e., it is necessary to educate young women scientists to balance their work-family responsibilities through effective task management, roles sharing and communication within the family context).

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Zero Waste Campaign: Towards a Sustainable Campus

Solid waste generation in Malaysia is increasingly rising, from 30,000 tonnes per day in 2013 to 33,000 tonnes per day in the year 2015. The recycling rate in Malaysia was officially announced by the Federal Government in 2013 as 10.5%. In the 10th Malaysia Plan, the government targeted a recycling rate of 22% by 2020. The achievement of recycling rates is essential to address the negative environmental impact, reducing GHG emissions and to develop a sustainable solid waste management in Malaysia on par with developed countries.

With a growing number of public and private universities in this country, the population of each campus is significant and generates waste that will have an impact on the environment if not controlled properly. With the generation of waste between Five to eight tons per day, it is estimated that the waste from academic institutions amounted to approximately 1,500 tonnes per day, which represents approximately 5-10% of the total waste generated in Malaysia.

Universities worldwide are embracing the move towards sustainability, including the University of Malaya (UM) as the premier university in the country. The Zero Waste Campaign (ZWC) is one of the university's longest and most consistent endeavours. It is also unique due to the bottom-up and top-down synergy that characterizes its development. It was set-up to spearhead the development of a more sustainable waste management model in the UM campus and ultimately achieve the status of a zero waste campus. It has the following objectives:

1. To develop policy and innovation systems to divert

organic waste (from disposal in landfill) for nutrient (composting) and energy recovery (anaerobic digestion).

2. To streamline recycling activities and strategize efforts to increase recycling rates.
3. To create awareness and inculcate best practices of waste separation at source among campus communities.
4. To serve as a long term campaign to achieve an integrated waste management model and ultimately a zero waste campus.
5. To initiate projects, research projects and schemes such as the Green Bag Scheme, an in-house composting centre, an anaerobic digestion project, recycling collection system, composting emission study, etc.

Universiti Malaya Zero Waste Campaign (UM ZWC)

The UM Zero Waste Campaign (ZWC) aims to spearhead the development of an integrated and sustainable waste management model at UM. The history of ZWC rooted from a students' group, "VeeCYCLE" which developed a recycling project in the Faculty of Engineering with "PRO bin" to promote the best practice of waste segregation at source. The inception of Green Bag Scheme in 2010 was inspired by the fact that food waste is the major problem in Malaysia. Subsequently, a composting centre was developed with funding from CIMB Foundation, support from UM top management especially DVC (Development) and JPPHB as well as technical assistance by IGES in 2011.

In 2013, UMCares continued the funding to ZWC and signed an MOU with CH Green Sdn. Bhd for research collaboration on COWTEC anaerobic digester. There were various visitors from different parties such as academic institutions, government agencies, private sectors and NGOS. The visit also resulted in research collaboration such as with UMT on compost microbiology research. A recycling collection day was carried out by ZWC in October, from several sites in the UM campus. About one ton of recyclables were collected on that particular day. For e-waste "bring" drop-off collection point at ZWC site, there were two collections by e-waste recycling company, with a total weight of about 800 kg.

In 2014, ZWC cooperates with Life Line Clothings Sdn. Bhd. to introduce a used clothes collection and recycling



UM ZWC Resource Centre.

programme and TSP Waste Management Sdn. Bhd. for separate collections of wood waste for energy recovery. In the following year, ZWC initiated the collaboration between SWCorp (National Solid Waste Management Corporation) and UM on ZWC model and projects by signing an MOU. JPPHB established a ZWC centre with a container-reuse concept, installed a weighbridge station and green waste chipper. A recycling drop-off centre is established a ZWC centre for collection of paper, plastic, metal, Tetra Pak UBC and e-waste. ZWC also collaborates with Climb Optima for a study on small-scale in-vessel composter.

Year 2015 was a special and significant year for ZWC. For the first quarter of 2015, ZWC welcomed a number of local and international visitors such as UMT, CETDEM, government officers from Bangladesh and GPNM. The biogas generator had arrived in February 2015. Four ZWC signage boards had been installed at the ZWC site for wood waste, composting, Cowtec AD and ZWC centre. The installation of UM ZWC Centre (container-style office & gallery building) started in March 2015 and completed in early May 2015 by JPPHB. ZWC forms collaboration with Climb Optima, provider of RimbaKU, a home rotary in-vessel composter. One unit of RimbaKU was placed at ZWC for testing and showcase purposes. In March, ZWC was invited by Dr. Nizam to UMT for presentation and assistance in the development of composting facility at UMT on 25th March.

A series of planning and meetings were carried out between several stakeholders of UM (JPPHB, OSH, ICR, Bursary, etc) from February until May 2015 for an MOU signing ceremony with SWCorp. After the ZWC centre installation, a launching event and MOU Signing ceremony between UM and SWCorp (National Solid Waste Corporation) was carried out on 28th May 2015, witnessed by the Secretary-General of Ministry of Urban Well-Being, Housing and Local Government. After the launching, the installation of a weighbridge station at the entrance of UM waste transfer station had kicked off in June and completed in July 2015. Weighing of solid waste and recyclables began in the



Collection and separation at source of UM wood waste.



Assoc. Prof. Dr. Sumiani with Prof. Koji Takakura who visited UM ZWC site in August 2015.

mid of July. A series of visits to ZWC centre took place after the event, with the notable one being Prof. Takakura Koji (inventor of Takakura composting method) on 18th August 2015. ZWC also collaborated with AIESEC to carry out some activities such as the waste audit and technical visit to Jeram sanitary landfill on 28th July.

ZWC was interviewed by various media and press in 2015 such as The Star, Astro Awani, Berita Harian, Utusan, Oriental Daily, The MalayMail, NSTP, Harian Metro, Sin Chew Press, Nan Yang Press, etc. The principal coordinator of ZWC, Assoc. Prof. Dr. Sumiani Yusoff, was invited to receive Green Era Award in Berlin on behalf of UM on 22nd March 2015.

A roadmap of ZWC was drawn up in 2013, with a goal to achieve 60% landfill diversion by year 2040. In the next 5-10 years, ZWC plays a vital role to formalize the collection of recyclable materials in UM and further increase the organic waste recycling with green waste shredding and windrow composting, while kitchen waste will be treated anaerobically with AD and aerobically with in-vessel composting. More fractions of wastes (such as e-waste, construction waste) will be collected separately for reuse, recycling or treatment to increase the recycling rate. Collaborations with government



Food and green waste composting and anaerobic digestion at ZWC site.

agency, private entity and local and foreign NGOs/IGOs will be intensified to introduce more environmentally friendly waste sorting and treatment technologies at UM.

Year 2016 was another important year for ZWC with the development of an intelligent recycling centre and other facilities as well as awareness programmes. ZWC is constantly looking for opportunities to sustain itself financially. One of the steps taken in 2015 was selling Baja Organik UM ZWC (compost) at RM 5 per kilogram. More measures are adopted to increase the income of ZWC for economy sustainability.

In the case of integrated waste management development at UM, several experiments (project, system, scheme, method and technology) are introduced and sustained with funding from the university. With these experiments at niche level, about 10% of total waste of the campus is diverted from landfill. This landfill diversion percentage is calculated based on several assumptions. Data collection is vigorously carried out recently to capture full waste generation data in the campus to obtain comprehensive baseline information which is essential for target setting for landfill diversion. At the same time, R&D and more experiments are needed to further enhance the on-site treatment and recovery facility to increase the landfill diversion rate.



MOU signing ceremony between UM and SWCorp on behalf of UM ZWC.

From left: Prof. Dr. Faisal Rafiq Mahamd Adikan, UM Deputy Vice Canselor (Development), Prof. Tan Sri Dr. Mohd Amin Bin Jalaludin, UM Vice Canselor, The Hon. Datuk Haji Mohammad Bin Mentek, Chief Secretary Ministry of Housing and Local Government, Malaysia, Datuk Ab. Rahim Bin Md. Noor, CEO SWCorp, Ir. Hj Sanusi Awi, deputy CEO SWCorp (Technical).



Launching of UM ZWC resource center.

From left : Ir. Hj Sanusi Awi, deputy CEO SWCorp (Technical), Datuk Ab. Rahim Bin Md. Noor, CEO SWCorp, Prof. Dr. Faisal Rafiq Mahamd Adikan, UM Deputy Vice Canselor (Development), Assoc. Prof. Dr. Sumiani Yusoff.



Media report in Berita Harian 6th Nov 2015 – interview Assoc. Prof. Dr. Sumiani on the importance of environmental conservation.

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***Halal* Consumerism: Regulations and the Impact on the Food and Cosmetic Industries**

In the age of globalization and consumerism, the world community has started to appreciate the importance of Muslim requirements for special products of their daily consumption; known as *halal* products. Food is, without any doubt, the main area for *halal*. However, another particular area of growth for *halal* has been in personal care products such as cosmetics. This understanding is certainly a positive turning point as it echoes cultural tolerance and acceptance of non-Muslim consumers, especially the West, towards Muslims. Malaysia is already ahead with its *halal* initiatives. This is evident by the fact that Malaysia was the first Muslim majority country where the government declared the development of *halal* sector as one of the most potential engines for growth for the national economy. Indeed, Malaysia was the first to incorporate '*halal*' into the scope of the long term economic planning; certainly the first to announce its ambition to become a global *halal* hub and the first to create a specific agency for monitoring *halal* and to develop plans for the national *halal* sector.

Due to developing interest in *halal* industries to both Muslim and non-Muslim enterprise, this research contends that there is a need to investigate the legal mechanism or regime, such as any regulation for *halal* consumer products, specifically, food and cosmetics, and if that regulation is adequate for protecting consumers. It will then seek to examine if such a regulation has any impact on the food and cosmetic industry. This is important as regulations have often been sought to monitor activities related to *halal* products, such as certification and the use or display of *halal* label. For the purpose of this research, the scope of jurisdiction will be Malaysia and Thailand; however, as the Western has also shown their appreciation for the importance of *halal* certification, the scope of this research is further extended to Europe, in particular Belgium, as it is the EU administrative centre and is one of the main players for *halal* in the EU. This is because about half of lamb and mutton meat in Belgian supermarkets and restaurants is *halal* slaughtered.

It is found that the main regulation on *halal* in Malaysia is by virtue of the Trade Description Act 2011. This Act has strengthened many *halal* aspects. This research found that the amendment made by Trade Description Act 2011 that has replaced the Trade Description Act



Dr. Zalina (left) and co-workers.

1972 has strengthened the aspects of enforcement, supervision and monitoring of *halal* logo as well as prosecution of related offences. With regard to our data collection, apart from document analysis, interviews and focus group discussions were conducted to complement the data. We have specifically conducted five interviews with *halal* relevant authorities in Malaysia.

From the interviews, it was found that Malaysia has been equipped with a good and stringent *halal* system of regulation. The main regulation of Trade Description Act 2011 has also been supported with another two Orders namely Trade Description (Definition of *Halal*) Order 2011 and the Trade Description (Certification and Marking of *Halal*) Order 2011. This Act replaced and repealed the 1972 Act and the regulations made under it. The 2011 Act does not only cover *halal* certification, as well as the process related thereto, but also standardizes and streamlines the enforcement of *halal*.

What makes it even more significant is that it gives power to the Malaysia's *Halal* Certification body known as JAKIM to carry out *halal* enforcement and supervision. Prior to 2010, JAKIM could only take action when the ministry officers were present, even though it was JAKIM who managed *halal* from the very beginning. Also, in the event of any complaint lodged about the abuse of *halal* certificate or the logo, JAKIM must notify the Ministry first prior to enforcement being carried out. This situation has been described as '*restricting the enforcement of halal*'. Realizing that, the Ministry later has therefore transferred and delegated

power of enforcement of *halal* to JAKIM by way of appointing JAKIM's *Halal* Monitoring and Enforcement Section officers (known as Islamic Affairs Officers) as 'Assistant Controllers of Trade Descriptions'. In summary, Malaysian *halal* regulation has undergone some shifts after the introduction of the TDA 2011 and after the delegation of power from the Ministry of Domestic Trade, Cooperatives and Consumerism, and to JAKIM's enforcement officers as Assistant Controllers of Trade Descriptions (for *halal*). This came about from the noble intention of the government to become the world *halal* hub. Having a stringent set of *halal* enforcement regulations would benefit the *halal* industry as well as the regulators and consumers. In short, undoubtedly, the alignment of *halal* regulation encourages innovation and enhances the market growth of *halal* products. The APD 2011 has clearly empowered JAKIM's *halal* enforcement officers to do monitoring and enforcement of its own without relying on the presence of any officers of the Ministry of Domestic Trade, Co-operatives and Consumerism. This was clearly not the situation before as such power was not mandated in the 1972 Act.

Apart from the regulations, *halal* regulation system in Malaysia is also supported by 18 *halal* standards. These standards have been developed by the Department of Standards Malaysia (JSM) and are developed through consensus by committees which comprised balanced representation of producers, users, consumers and others with relevant interests. The involvements and representations from many interested parties can ensure the effectiveness and efficiency of the standards. There are also some challenges and issues in the course of the implementation of *halal* operations and enforcement in this country. One of the major challenges for Malaysia in streamlining *halal* enforcement and monitoring is in the aspect of the lack of personnel, resources, structure and technical facilities. This lack of personnel to

conduct *halal* enforcement, in particular in monitoring the use of the certified *halal* logo, has resulted in people questioning its legal status. As *halal* products now attract a much wider market, many business operators make significant and better profit if they have a *halal* certification which makes the number of application for *halal* certification grow day by day.

To achieve the third objective of this research, that is, to study the impact of the above regulations on the *halal* industry, we have carried out some interviews and focus group discussions with the industry. We have identified two main categories for this purpose, that is, the multi-national and medium scale industry which has the same requirements in terms of *halal* management responsibility. This management responsibility has been determined *vis-a-vis* *Halal* Certification Manual produced by JAKIM in order to ensure the smooth process for applying *halal* certificate. The second category is the small and micro scale industry which has somewhat lesser requirements with regard to management responsibility.

From the interviews and focus group discussions that represent both categories, it was found that multinational and medium scale industries did not have much fuss about following the requirements of *halal* certifications and abiding regulations and the relevant *halal* standards. They also regard such standards as useful guidelines in their internal *halal* operation apart from the *Halal* Certification Procedure Manual that has been issued by JAKIM. Such industries have been helped by having their internal *Halal* Committees that are responsible to organise, manage and control all *halal* production system of their companies. This is also due to the fact that as multinational and medium industries, they are among the big players and having some good *halal* system to help them to gain their good repute. While such industries have a more systematic *halal* internal system thereby making *halal* certification and supervision by the authority easier, the small and micro scale industries are not of the same situation. Although it has been required that they need to only have at least one *halal* supervisor and one Muslim worker that is, for small scale and only one Muslim worker for micro scale, these industries have expressed that they have been having some difficulties in getting their *halal* certification and in following the strict requirements in the relevant standards. It has also been mentioned that our *halal* system and regulation tend to be more 'big-player friendly' than being more accommodative to the small and micro scale group industries. The arduous and lengthy *halal* process, according to this group, has not been helped by the



Dr. Zalina's visit to *Halal* Food Authority.

very slow response of *halal* certification authority, especially from JAIN, that is, the *halal* authority in each state. Some have waited almost a year to get any response of their application. Having mentioned this, however, in this research, it was found that sometimes the long/lengthy *halal* process comes from the industry themselves. Some of the industries did not fill in proper documentation, failed to attach the list of raw materials providers and have difficulties in understanding the relevant process of certifications and relevant *halal* standards.

As to the forth objective, that is, to have some observations on what minority Muslim countries have on *halal*, we have travelled to Thailand and Europe for some field research, particularly to do some interviews with our relevant respondents. Although the trip was to do some brief investigations on how *halal* system has operated, it is worthwhile to note that all of the selected countries we visited have used Malaysia's *halal* certification system and standards as their guidance in administering their *halal* operations.

As for Thailand, their *halal* operation is quite developed particularly for having CICOT (The Central Islamic Council of Thailand) as a relevant body that approves *halal* logo and products, the *Halal Standard Institute of Thailand* that was developed in building *Halal* in Thailand not only to be in line with the Islamic principles but also to train capable personnels to support the manufacturing and export of their *halal* productions. The development of *halal* in Thailand is also very much enhanced by a very scientific and hi-tech laboratory located at the University of Chulalongkorn built specifically to test *halal* products. However, as a Muslim minority country, there is no single specific regulation in Thailand as far as *halal* is concerned.

As for many European countries, they do not have a single *halal* system but their *halal* industries are guided by some *halal* certification bodies that produce their own *halal* certificates and logo. Some of the certification bodies are recognised by JAKIM while others that do not fulfill JAKIM's requirements are not recognised. Because each and every certification body has a different and own standard, the issue arises as the non-uniformity of the *halal* requirements. The example is the case of stunning that has been the issue between most certification bodies as well as the industry. While some certification bodies accept such slaughtering method, certain others are in the opposite direction altogether claiming that such a method is not in line with the Islamic principle at all thereby marking all slaughtered animals using stunning as haram to be eaten. This has

caused some confusions and as a result, the Muslim society is perplexed by such situations. In addition, competition between certain certification bodies has also been a concern as some of them 'speak ill of the other.'

During our visit, we had the opportunity to attend *Halal Expo of Europe*. We managed to meet many *halal* operators based in Europe. In our view, having attended and mingled around with them, we found that the notion of *halal* has now gained some serious recognition in this region, especially by non-Muslim operators who were very committed to producing and marketing their *halal* products. Bilal Food Corporation, from the Netherlands, is an example of a company we met that thoroughly understands *halal* (good, safe and of quality) and is dedicated to outreaching more consumers. They have a plan of entering 'Albert Heijn', the oldest supermarket owned and operated by the Dutch supermarket operator Ahold. Presumably that happens in the nearest time. Muslim consumers will definitely benefit a great deal from this.



Halal Logo.

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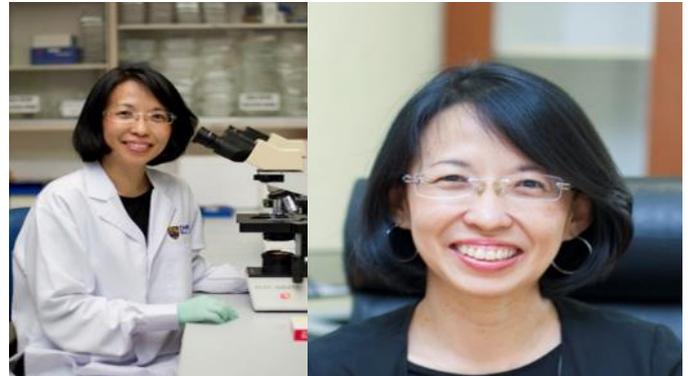
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Championing Health Issues of Orang Asli: Prof. Dr. Yvonne Lim

Since 2010, the Academy of Science Malaysia (ASM) has embarked on the Top Research Scientists Malaysia (TRSM) initiative. This initiative aims to identify and recognize the contributions and accomplishments of leading Malaysian research scientists as role models of excellence, mentors for the next generation and leaders to forge ahead with the Science, Technology and Innovation (STI) agenda of the nation. From 2012 till 2016, there have been a total of 120 recipients.

On the 15th August 2016, the Academy of Sciences Malaysia (ASM) recognised 10 individuals as recipients of the Top Research Scientist Malaysia (TRSM) 2016 in a grand award presentation ceremony partly held in conjunction with the International Conference on Science for Peace, on 15-16 August 2016 at Royale Chulan Hotel, Kuala Lumpur. The ceremony was graced by His Royal Highness Paduka Seri Sultan Nazrin Muizzuddin Shah Ibni Almarhum Sultan Azlan Muhibuddin Shah Al-Maghfullah, the Sultan of Perak.

Prof. Dr. Yvonne Lim Ai Lian from the Department of Parasitology, Faculty of Medicine, University of Malaya (UM) was one of the two recipients of the TRSM award from the University of Malaya. The other UM recipient is Prof. Dr. Noor Hayaty Binti Abu Kasim from the Faculty of Dentistry.



Prof. Dr. Yvonne Lim.

Prof. Yvonne Lim's field of expertise is in the neglected tropical diseases, in particular the soil-transmitted helminth (worm) infections. As Malaysia undergoes tremendous development, worm infections are now being concentrated in pockets of society such as in the minority and disadvantaged communities. Her work inevitably brought her closer to the Orang Asli (indigenous) communities, where these infections are still thriving.

Initially, her work with worms was predominantly to determine the extent of worm infections and their health consequences on the Orang Asli communities. The data accrued by her team has convinced the Department of Orang Asli Development (JAKOA) to re-initiate mass deworming programmes in the Orang Asli communities. To assist deworming programmes to be more targeted to high risk areas, her team comprising Dr. Romano Ngui from the Department of Parasitology and Dr. Aziz bin Shafie from the Department of Geography, UM, developed predictive maps of worm infections using geographic information system (GIS) and remote sensing (RS) tools which can indicate the high risk locations and estimate the number of individuals to treat. Subsequently, she together with Dr. Ahmed Khalaf S Al-Delaimy, Assoc. Prof. Dr. Hesham M Al-Mekhlafi and Prof. Dr. Rohela Mahmud developed a school-based programme called HELP (Health Educational Learning Package) in which teachers and Orang Asli school children are empowered with the knowledge on worm infections and ways to curb the infections. This health education programme coupled with deworming has proven effective in reducing worm burdens in these communities. The data from these studies have been presented and shared with the Indigenous Health



Recipients for Top Research Scientist in conjunction with International Conference on Science for Peace.

Prof Dr. Yvonne Lim Ai Lian (third left); Prof Dr. Noor Hayaty (second right)

Unit, Ministry of Health, Malaysia in order to make this information available with the relevant national agencies for the improvement of policies on worm infections. Prof Yvonne Lim has also been featured in Asyik FM which is an Orang Asli Radio Channel operated by Radio Televisyen Malaysia to educate the Orang Asli on the effects of worm infection and to encourage them to come forward for treatment.

In recent years, Prof. Yvonne has come to embrace worms not just as human foes but as friends. Her team's latest landmark publication with Dr. Lee Soo Ching, Assoc. Prof. P'ng Loke, Assoc. Prof. Ken Cadwell and other collaborators from New York University in the prestigious journal of SCIENCE April 2016 (Impact Factor 34.611) discovered the mechanisms of how low levels of worm infection promote growth of probiotic bacteria that has the potential to treat inflammatory bowel diseases (IBD) such as Crohn's disease and ulcerative colitis. This ground breaking discovery was reported in Reuters, CBS News, NBC News, Fox News and locally, in the STAR newspaper and BFM 89.9 radio station.

Indeed, the journey to "Science" was an exciting and electrifying achievement but as the dust of celebration settles down, she confessed that "more importantly, my journey with the Orang Asli has unfolded a deeper sense of appreciation for humanity and the environment. The more rewarding lesson in life came from witnessing the lives of the Orang Asli - how to live a life of contentment". She would like to dedicate this award to her family who have been her stronghold and sources of inspiration. This is also a wonderful recognition for all her students (past and present), technicians and colleagues at UM especially at the Faculty of Medicine and Department of Parasitology.

The field of Parasitology is a niche area. However, Prof. Yvonne believes that the key to meaningful and impactful research is to develop good collaborations that transcend disciplines. She mentioned that "we need to go beyond our comfort zones and try to do more with less. When you do '*Science with a passion for the betterment of Humanity*', it will give you the courage to walk on the road less travelled and to create your own path".



Prof. Dr. Yvonne Lim with her co-researchers.

In a nutshell, she said that, "Good scientists do not just happen. They are those who have known defeat, faced countless rejections of grant proposals and manuscripts, known the struggles in research but have persistently risen up, found their way out of depths and made the best out of adversities. They never cease learning from others and appreciate the value of teamwork".

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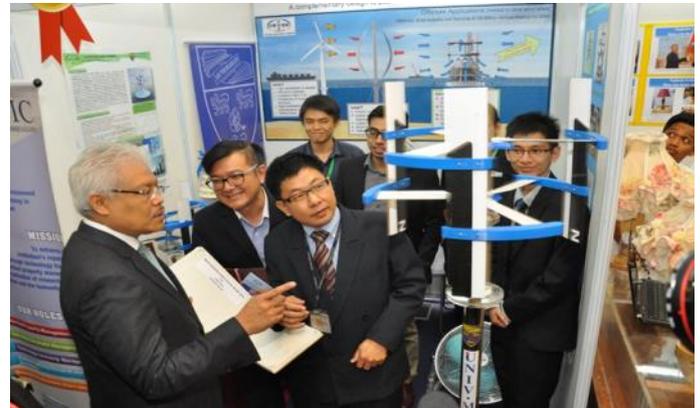
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Cross-Axis-Wind-Turbine: Winner of National Intellectual Property Award (AHIN) 2016

The National Intellectual Property Award or *Anugerah Harta Intelek Negara (AHIN)* by the Ministry of Domestic Trade, Co-operatives and Consumerism together with the Intellectual Property Corporation of Malaysia (MyIPO) started in 2006. The aim of this award is to recognize the contribution of inventors and their intellectual properties to the social-economic development of the country. In addition, it is to encourage creativity and the development of innovation culture among Malaysia citizens.

This year, in conjunction with the National Intellectual Property Day, the event was held at Dewan Merdeka, Putra World Trade centre (PWTC), 2nd August 2016, with the theme of “*Transfromasi Negara Melalui Permerkasaan Harta Intelek*”.

A research group led by Assoc. Prof. Dr. Chong Wen Tong from the Faculty of Engineering, University of Malaya was awarded the First Prize for the patent category with the invention called “Cross-Axis-Wind-Turbine”. The award comes with an AHIN trophy, a World Intellectual Property Organization (WIPO) medal, RM10,000 and certificates which were presented by the Minister of Domestic Trade, Co-operatives and Consumerism, Dato’ Seri Hamzah bin Zainudin. The WIPO medal for Inventors is awarded by national and international organizations to outstanding inventors with particular attention given to



Assoc. Prof. Dr. Chong explaining his invention.

those who have made inventions which are considered to be significant contributions to the economic and technological development of their country in the context of international exhibitions or competitions at the highest national level.

The University of Malaya stood out as the top among five finalists for the patent category, with the other four being Malaysia Nuclear Agency (Silver medal); Universiti Kebangsaan Malaysia (UKM) (Bronze medal); Paediatric department, Hospital Taiping; and Universiti Kuala Lumpur Malaysia Spanish Institute (UniKL-MSI). Apart from the patent category, the other categories are industrial design, copyright, trademark and geographical indication.

The Cross-Axis-Wind-Turbine (CAWT) is a novel wind turbine with high efficiency. It is able to capture wind flows from all directions. Generally, there are two types of wind turbine which are the iconic horizontal axis wind turbine (HAWT) and the vertical axis wind turbine (VAWT). Situations such as low wind velocity, high turbulence, and high directional variability cause significant problems and reduce the efficiency of HAWTs. Certain vertical axis wind turbine (VAWT) designs have the ability to operate well in these harsh operating conditions. However, the VAWT possesses a lower power coefficient and start-up performance compared with the HAWT.

In order to overcome these issues, a novel CAWT is conceptualized to extract wind energy from the horizontal and vertical directions of the on-coming winds, therefore maximizing the wind energy potential. The



“Cross-Axis-Wind-Turbine” invention won the First Prize for the Patent Category.

CAWT consists of three vertical blades and six horizontal blades arranged in a cross axis orientation. The horizontal blades also serve as the radial supporting-arms that link the vertical blades and the hubs through specially designed connectors to form the wind turbine. Six horizontal blades that make up the upper and lower radial arms connect the top and bottom parts of the vertical blades to the hub through the connectors. To avoid air flow blockage and to smoothen the torque fluctuations during operation, the upper and lower radial arms are designed to be at an offset angle of 60°. The air stream that is channelled from the bottom of the turbine will interact with the lower and upper radial arms/horizontal blades. The interaction of the air streams with the horizontal and vertical blades improves the self-starting capability of the wind turbine. The lift generated by the airflows through the horizontal blades creates an aero-levitation force which reduces the bearing friction inside the generator. This will extend the lifespan of the generator and in turn, the lifespan of the wind turbine. The CAWT is applicable in a wide variety of locations, creating significant opportunities for the use of wind energy devices and therefore alleviating dependencies on fossil fuels.

The CAWT system can be installed as stand-alone or it can be integrated onto buildings for power generation. The installation is easy and without wire trenching on the ground, and the electric power generated can be supplied to the users for any application, such as on-site power generation, especially for urban areas and islands. Applications on remote islands represent a wide market, for example, the island countries, such as the Philippines and Indonesia. It is suitable for both the urban areas and locations that are far away from the national grid line such as high-rise buildings in cities, fish farms, highlands and beach resorts.

The CAWT is also proposed to be used in harvesting off-shore wind power. It is more stable compared to the HAWT as its center of gravity is located at a lower level especially during rough sea profiles in bad weather. The CAWT power extraction performance at off-shore is expected to outweigh the VAWT as more torque is available from the concentrated and directed wind produced by the omni-directional shroud for which the VAWT does not have.

The invention was also awarded 1st runner up during the Engineering Invention & Innovation Exhibition, EINIX 2015 organized by The Institution of Engineers Malaysia (IEM). Currently, the research group is developing an up-scale 300W prototype. The project is supported by the Fundamental Research Grant Scheme (FP053-2013B),

Malaysian Ministry of Higher Education and University of Malaya High Impact Research Grant (HIRG). Special appreciation is credited to the UM Centre of Innovation & Commercialization (UMCIC) for the patent filing and support throughout the competition and exhibition.



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MALAYSIAN JOURNAL OF COMPUTER SCIENCE

MoHE 2016 CREAM AWARD: BEST ISI-JOURNAL CATEGORY

The Malaysian Journal of Computer Science (MJCS) is a journal published by the Faculty of Computer Science and Information Technology, University of Malaya, since 1985. It is abstracted or indexed in ISI, SCOPUS, Malaysian Citation Index (MYCite) and Asian Citation Index (ACI). Based on JCR 2015: Impact Factor 0.476 (Q4), Ranked 122 out of 130 journals in the category Computer Science, Artificial Intelligence. Based on JCR 2015: Impact Factor 0.476 (Q4), Ranked 96 out of 105 journals in the category Computer Science, Theory & Methods. Based on SJR 2015: SJR 0.289 (Q2), Ranked 132 out of 444 journals in the category of Computer Science.



Award was presented by Datuk Dr. Mary Yap Kain Ching (Deputy Minister of Higher Education) to the Editor-in-Chief of MJCS

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MALAYSIAN JOURNAL OF LIBRARY & INFORMATION SCIENCE

MoHE 2016 CREAM AWARD: BEST ISI-JOURNAL CATEGORY



Award was presented by Datuk Dr. Mary Yap Kain Ching (Deputy Minister of Higher Education) to the Editor-in-Chief of MJLIS

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The Journal publishes original research articles in the field of library and information science (LIS) as well related domains that encapsulate information and knowledge. The journal aims to provide a forum for communications amongst LIS professionals especially within the Asia Pacific region, to introduce new concepts, methodologies, systems and technology. The journal is being indexed and abstracted by Science Citation Index (ISI), SCOPUS, LISA (Library and Information Science Abstracts), Library Literature, LISTA, Journal of Academic librarianship, Malaysian Citation Index (MYCite) and Asian Citation Index. Based on JCR 2015: MJLIS Impact Factor 0.476 (Q3), Ranked 62 out of 86 journals in the category Information Science, Library Science. Based on SJR 2015: MJLIS SJR 0.361 (Q2), Ranked 88 out of 193 journals in the category of Library & Information Sciences.

ASIAN JOURNAL OF BUSINESS AND ACCOUNTING

MoHE 2016 CREAM AWARD: BEST SCOPUS-JOURNAL CATEGORY

Asian Journal of Business and Accounting (AJBA) is an international refereed journal, published by the Faculty of Business and Accountancy, University of Malaya. AJBA is indexed in Web of Science Emerging Sources Citation Index, Scopus, ERA 2012, Asean Citation Index and Malaysian Citation Index (MYCite). The AJBA covers a broad spectrum of the business and accounting disciplines.



Award was presented by Datuk Dr. Mary Yap Kain Ching (Deputy Minister of Higher Education) to the Editor-in-Chief of AJBA

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INSTITUTIONS & ECONOMIES

MoHE 2016 CREAM AWARD: BEST SCOPUS-JOURNAL CATEGORY



Award was presented by Datuk Dr. Mary Yap Kain Ching (Deputy Minister of Higher Education) to the Editor-in-Chief of Institutions and Economics Jurnal

Institutions & Economies is targeted at advancing the study of institutions and the functioning of firms, organizations, networks and civil society in the demand and delivery of goods and services. Institutions & Economies is indexed in Scopus, Malaysian Citation Index (MYCite), EconPapers, Ideas and UDLedge. The journal specifically promotes research on the role of institutions in allocating and coordinating social and economic needs of societies. Institutions and Economies is published by the University of Malaya.

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IPPP Central Laboratory Facilities

FACILITIES	MODEL	TEST/SERVICES
Nuclear Magnetic Resonance (NMR 270 MHz)	JEOL 270 MHz	¹ H, ¹³ C & others
Nuclear Magnetic Resonance (NMR 600 MHz)	Bruker AVANCE III 600 MHz	¹ H, ¹³ C & 2D analysis
Sample Preparation (SEM)	Polaron CPD 7501 Critical Point Dryer Biorad Sputter Coater	Carbon/Gold Coating; Chemical Treatment /CPD
GCMS	7890A GC/ MS Agilent 5975 Shimadzu QP2010 ULTRA GCMS	Compositional Test (Scan & SIM Mode using RTX-5 Column); Compositional Test (Own Column)
Confocal Laser Microscope	Leica Tcs Sp5 li	Fluorescent Imaging; Life cell imaging (Time Lapse)
Field Emission Scanning Electron Microscope (FESEM-EDX)	Quanta FEG 450 EDX-OXFORD	Imaging; Compositional
Surface Area Analyzer (BET)	Micromeritics ASAP2020 TRISTAR II 3020 Kr	Surface Area; Pore Volume; Pore Size Distribution
Differential Scanning Calorimeter (DSC)	Perkin Elmer (DSC-8000)	Heat Flow Analysis; Specific Heat Capacity (Cp)
Simultaneous Thermal Analyzer (STA)	Perkin Elmer (STA-6000)	Weight Loss; Melting Curves
Dynamic Mechanical Analyzer	Perkin Elmer	Creep Test
Particle Image Velocimetry (PIV)	Dantec Dynamics Nano L135-15piv	2D & 3D Imaging
DNA Sequencer	Applied Biosystems (3730xl DNA Analyzer)	DNA Sequencing
Real Time PCR	Applied Biosystems Quantstudio (12k Flex Real Time PCR System)	Quantitative PCR Application
LCMS	Agilent Technologies	Qualitative
UHPLC	Agilent Technologies	Qualitative
Ellipsometer	J.A. Woollam M-2000	Change in Polarization; Optical Constant; Film Thickness
Rheometer	TA Instruments DHR-2	Viscosity; Viscoelastic
Tensiometer	Attension Sigma 700	Surface and Interfacial Tension; Powder Wettability

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(Mr. Yani)
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 Fax: +603-7967 6390

CALENDAR 2017

January 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

February 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

March 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

April 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

May 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

June 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

July 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

August 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

September 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

October 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

November 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

December 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

28-Jan Chinese New Year
 29-Jan Chinese New Year (2nd Day)
 1-May Labour Day
 10-May Vesak Day
 3-Jun Yang Dipertuan Agong's Birthday
 25-Jun Hari Raya Puasa
 26-Jun Hari Raya Puasa *
 31-Aug National Day

1-Sep
 16-Sep
 21-Sep
 18-Oct
 1-Dec
 25-Dec

Hari Raya Haji *
 Malaysia Day
 Awal Muharram (Maal Hijrah)
 Deepavali *
 Prophet Muhammad's Birthday (Maulidur Rasul)
 Christmas



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