

# pulse@UM

► Be kind to yourself as you  
serve others

► Increased vulnerabilities:  
The well-being of people who use  
illicit drugs in the era of COVID-19

► Remote psychological first  
aid

SPECIAL ISSUE

## MENTAL HEALTH

in the Era of COVID-19



**UNIVERSITI  
MALAYA**  
*Faculty of Medicine*

A RESEARCH BULLETIN BY THE FACULTY OF MEDICINE, UNIVERSITY OF MALAYA

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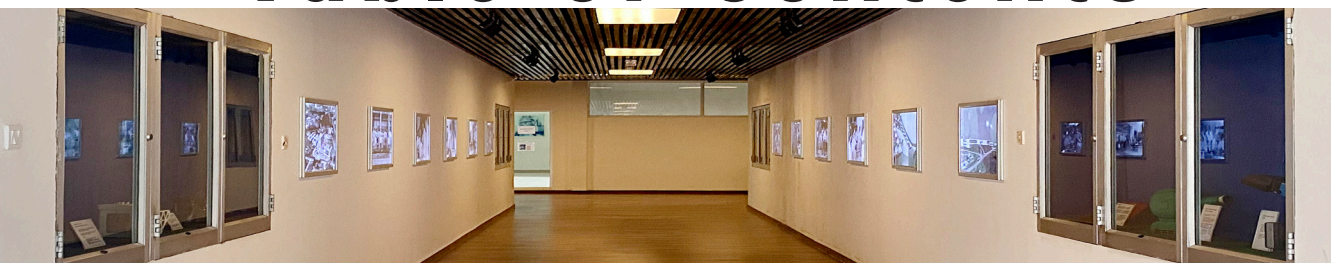
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# Foreword from the Deputy Dean

► Professor Dr Ng Chirk Jenn  
Deputy Dean (Research)

It has been more than three months since we were physically back at work. I hope everyone is coping well and adjusting to the new normal.

Despite the challenging times, the Faculty of Medicine research community has been working relentlessly to find ways to tackle and cope with the COVID-19 pandemic and its impact. Impactful research ranging from clinical trials, basic science research to public health interventions have been conducted; the cover story of this issue of Pulse focuses on an important but neglected area of research during the pandemic – mental health and wellbeing.

Constant fear of infection, social distancing and financial impact related to the pandemic have resulted in isolation, loneliness, stress and, for some, more severe mental health problems like anxiety and depression. The psychological impact of the pandemic and movement restriction cuts across all populations and sectors; from front-line healthcare workers, young and old, to people using illicit drugs. The featured articles highlight the psychosocial challenges faced by these populations and how these issues can be explored and tackled via research.

This issue of Pulse also celebrates excellent research work by two female scientists in our Faculty. Associate Professor Chan Yoke Fun won the US-ASEAN Science Prize for Women 2020 for her research work in emerging viruses, while Dr Wong Kah Hui, whose work on health effects of mushroom won her team a gold medal at the Malaysia Technology Expo 2020. The 'Research Spotlight' presents the first virtual academic exchange between FOM and Chang Gung Memorial Hospital, where both institutions shared experiences and effective strategies in managing the COVID-19 infection. More webinars will be conducted in the future to showcase the clinical expertise and research work between UM and CGMH.

I would like to take this opportunity to congratulate the Editorial Team for putting together yet another exciting and informative issue. Happy reading!

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## COVER PHOTO

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## Cover Stories Mental health

**H**ealthcare providers often neglect taking care of their own wellbeing as they prioritize the health of their patients. They are exposed to emotionally demanding situations, high rates of emotional exhaustion, compassion fatigue and burnout. For those in the academic line, constant demands of tight deadlines can further add to the commitment burden. As for medical postgraduate trainees, their stresses emerge from the added responsibility to complete their postgraduate studies in addition to the existing

demand of clinical work. It is also common for health care providers to be working in an environment where one has little control and in some situation, receives

of work and a feeling of ineffectiveness. Worst still, there is also a tendency to view people as objects rather than people (Maslach,1996).

Be kind to yourself  
as you serve others

insufficient reward for the effort given. Stress in health care professionals is an area of concern. Evidence shows that it affects mental health, quality of life and job performance negatively.

### How to deal with stress

One promising area in mental health intervention among health care professionals has focused on self-compassion; a healthy way of responding to failure and distress by self-care emotional regulation. Neff (2009) describes self-compassion in three interconnected components: self-kindness, common humanity and

Prolonged stress can lead to burnout, a syndrome of emotional exhaustion, excessive stress, loss of meaning

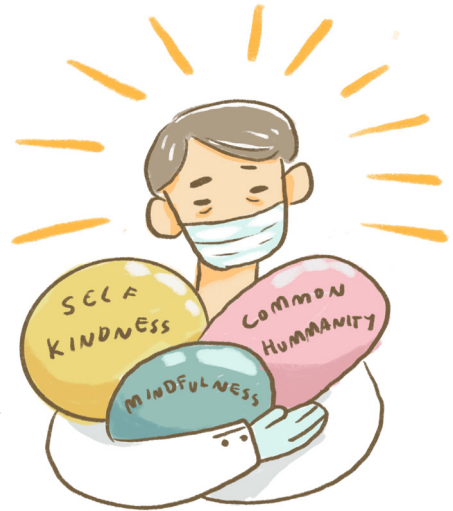


The three interconnected components of self-compassion:

■ **Self-kindness** refers to employing kindness toward the self and not placing any judgement or criticism when confronted with a personal failing. It is easy to be kind to others. In a clinical set up, healthcare providers are kind to patients but most often than not, they can be hard on themselves when things do not go as planned.

■ **Common humanity** relates to the concept that difficulties in life are a natural part of human condition. One needs to accept the fact that difficulties may present themselves in different forms for each person and that everyone has to cope with them. The awareness of a commonality of difficulties can help prevent one from feeling isolated, dwelling in a state of self-pity and shamefulness when faced with challenges.

■ **Mindfulness** refers to an enhanced present-moment awareness and a willingness to experience emotions with openness, curiosity and acceptance. The development of the mindfulness-based stress reduction (MBSR) technique by Jon Kabat-Zinn led to the popularity of the concept in health care. There seems to be many medical schools that have introduced mindfulness in their curricula for their students.



Professor Dr Sajaratulnisaht bt Othman  
Department of Primary Care Medicine

Realizing the importance of maintaining individual well-being, the Department of Primary Care Medicine, University Malaya is slowly introducing the concept of self-compassion to its team members. One of the efforts involves piloting the modified MBSR training (a weekly one-hour face-to-face session for four weeks) to postgraduate trainees

(n=38). Trainees who were exposed to the MBSR technique showed lower scores for work burnout and stress after one-month of completing the training. Lower stress scores were also sustained after a three-month completion of the training. Additionally, trainees who had undergone the MBSR training for three months completion have lower scores for depression compared to those who did not undergo the training. Thus, it can be concluded that this simple and low cost training proves to be effective and can be recommended to a larger academic population.

“You cannot take care of someone until you’ve taken care of yourself”. This simple phrase is of great importance during this challenging time. There is an urgent need to ensure the well-being of healthcare providers at the work place especially during this pandemic. The first step to a better well-being is by practicing self-compassion.

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# Remote Psychological First Aid

An unprecedented effort to address UMMC healthcare workers mental health during the COVID-19 pandemic

**H**ealthcare workers (HCWs) involved in handling the COVID-19 pandemic are often required to work in highly challenging conditions. They may, therefore, be at an increased risk of experiencing mental health problems. The University of Malaya Medical Centre (UMMC), being one of the designated COVID-19 hospitals nationwide, would inadvertently expose their HCWs working in this unfortunate situation.

During the COVID-19 pandemic, many UMMC's HCWs were confronted with enormous pressure, such as the risk of an infection, long working

hours, potential shortage of protective equipment, physical fatigue, discrimination, and fear of transmitting the COVID-19 virus to their family members. With the spike of cases that occurred in March 2020, the

## Remote Psychological First Aid (r-PFA) development in UMMC

In line with the World Health Organization's (WHO) recommendation for use in a disaster situation, Psychological First Aid

fear and uncertainty among HCWs intensified. This led to the need for emotional support for our HCWs, and therefore, the psychological intervention team, which consists mainly of psychiatrists, psychologists and counsellors was set up.

(PFA) was implemented in UMMC to help the HCWs cope with psychological distress. However, due to the restriction of physical contact during COVID-19, the administration of PFA in UMMC had to be done remotely using the online platform. The modification of PFA is re-branded as remote Psychological First





Aid (r-PFA). The traditional method of 'look, listen, link' was modified to 'reflective listening and linking'.

The psychological intervention team was provided with a one-day intensive training session on how to run this service. They were trained on the use of the module as well as the principles of r-PFA.

The two main principles applied in r-PFA are:

### 1. Reflective Listening

The trained personnel would demonstrate reflective listening to acknowledge the HCWs' feelings and to help them express their frustration or difficulties. With the belief that each healthcare worker is affected differently during this COVID-19, this step would give the r-PFA personnel an overview of how to help the HCWs individually. Moreover, with this effective listening method, the trained personnel could help enhance the individual HCW's sense of control, supporting them in making good personal choices, promoting positive coping mechanisms, and encouraging them to seek support within their social network.

### 2. Linking

After assessing the individual HCW's needs, the r-PFA personnel would assist them in accessing information, mobilizing social support or services, and tackling practical solutions to ease their distress.

### r-PFA approach for UMMC health care worker

A protocol for r-PFA referral and flow of care was established. HCWs who were facing possible psychological distress were identified by the r-PFA team using an online platform. A screening questionnaire was provided using the 'WhatsApp' application to identify the HCWs level of distress in handling COVID-19. If they answered 'Yes', the HCWs would be assigned to a trained r-PFA personnel for the r-PFA to be administered. Each HCW was assessed and handled based on the level of severity of their psychological distress.

The r-PFA personnel would administer the r-PFA to the HCWs via phone calls as per the protocol and they would followed up accordingly. HCWs who require more specialized psychological treatment would be referred to the necessary services.

Overall, the response of HCWs requiring r-PFA was encouraging and beyond expectations. Moreover, the team was able to provide adequate support that was required for them. The initiative of



establishing r-PFA in UMMC demonstrates our commitment towards addressing psychological distress during COVID-19 among HCWs. This incredible approach should be viewed as a milestone for UMMC in establishing protocols in preparation for future disasters or public health emergencies that could affect the mental well-being of our HCWs. ■



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Department of Psychological Medicine

Co-author: Dr Aliaa bt Juares Rizal,  
Dr Farah Nabila bt Abd Majid





**R**elationships give people support, happiness, contentment, a sense of belonging, a role to play in society and access to opportunities, services and resources. They also constitute support networks

However, social isolation resulting from physical distancing due to a pandemic, for example, can harm young people and break these vital connections. Consequently, it will affect their moods and strain their interactions with others, elevate their risk for

pandemic has resulted in governments worldwide implementing disease containment measures, such as the closure of schools and universities, social distancing and home quarantine. Accordingly, young people are now experiencing a prolonged state of physical isolation from their peers, teachers, extended families and community networks.

### Social Isolation and Young People's Mental Health

# Building Social Connectedness

to be called on for help in difficult times. Actively relying on or activating one's relationships, whether in daily conversations or occasional messages, generates social connectedness, which refers to the experience of belonging and the relationships people have with others. Socially connected individuals have trusting, profound relationships and bonds with those around them, including their families, peers and communities. Young people who reported higher levels of social connectedness at one point in time would subsequently report a higher level of well-being (Jose et al., 2012).

mental health problems such as anxiety and depression. Social isolation, defined as inadequate quality and quantity of social relations with other people (Zavaleta et al., 2014) is a pressing issue among young people. Using the context of a pandemic, this brief article describes the impact of social isolation on young people's mental health and highlights the basic means of preventing social isolation in this age group.

#### Impact of Social Isolation on Mental Health

The present COVID-19

These disease containment measures are thus likely to result in increased loneliness in adolescents and youth, whose usual social interactions are now restricted. A systematic review to determine the impacts of social isolation, quarantine and social distancing in the context of public health crises found that mental distress was common among children and adolescents who experienced periods of quarantine or social isolation (Gayer-Anderson et al., 2020).

#### Prevention Strategies

To prevent the impact of social isolation on mental health, all young people should have opportunities and social support from their families, communities, practitioners and public systems to cultivate strong,





resilient self-identities and supportive, nurturing relationships.

Given the critical roles of these groups, each can provide an environment that fosters social connection in young people. However, to achieve this, young people must be the central actors and develop strong, resilient self-identities. One of the ways to achieve a positive self-identity is by developing and maintaining strong self-efficacy; indeed, Tahmassian and Jalali Moghadam (2011) found that low self-efficacy is strongly related to high levels of depression and anxiety.

Family connectedness is another important protective factor for young people that can reduce the likelihood of mental health problems during social isolation and improve general well-being. Families and caregivers should thus become more engaged in their children's learning, communicate openly and spend time with their children through shared activities.

When social isolation occurs during a lockdown, schools and universities as well should monitor their students and continue academic supervision with remote psychosocial support until

society reopens and further support can be provided. This includes ensuring distance learning is accessible for all students and that it contains positive messages to strengthen their mental health and well-being.

Health care providers should also offer preventive support and early mental health interventions where possible. Additionally, they can engage parents in discussions about how to connect and communicate effectively with their children.

Local governments as well have much to gain from supporting social connectedness in their communities during social isolation, including increasing volunteering, bolstering a sense of community pride and, most importantly, building up and strengthening resilience. With these actors' means of preventing social isolation in young people, the lives of these young individuals during a pandemic or other instances that require social distancing can be enhanced, despite the circumstances. ■



In a survey among 1,784 primary

students in Wuhan and Huangshi, China (Xinyan et al., 2020), who were restricted to their homes for 2–3 months,

**23%**

had **depressive** symptoms,

**19%**

had **anxiety** symptoms.



People in Great Britain aged 16 to 24 (50.8%

were more than **twice** as likely to have experienced **“lockdown loneliness”** during COVID-19 pandemic as those aged 55 to 69 (24.1%) (Pidd, 2020).



Associate Professor Dr Nik Daliana Nik Farid

Department of Social and Preventive Medicine

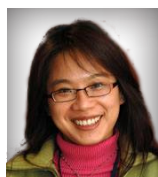
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## UM researchers reaching out to the community during the Movement Control Order



Associate Professor Dr Ivy Chung  
Department of Pharmacology

**T**he COVID-19 pandemic has significantly affected people from all walks of life. As of July 2020, there are about 8900 positive cases of COVID-19 reported in Malaysia, with 123 fatalities (Ministry of Health Malaysia). In the efforts to combat the rapid transmission of COVID-19, the Malaysian government has implemented phases of conditional movement control order (MCO) and provided guidelines on social distancing to flatten the curve. As a result, we have achieved high rates of recovery daily

without burdening the healthcare front-liners, therefore, it appears that Malaysia has controlled the outbreak relatively better than other countries.

Apart from focusing on the healthcare management, financial policy response and political response to the COVID-19 outbreak, one should not overlook the impact of the outbreak on the psychosocial well-being of the community. Everyone – whether they are business owners, housewives, teachers, children or the senior citizens – is vulnerable to the feelings of anxiety, fear, and also depression, while coping with the new normal.

Since the implementation of the MCO, 32 researchers from Universiti Malaya (UM) have joined forces to

address the psychological crisis that carries significant weight in the overall deployment of disease control. These researchers came from various faculties in the university, namely the Faculties of Medicine, Education, Arts and Social Sciences, Business and Accountancy, Languages and Linguistics as well as from the Centre for Sport and Exercise Sciences, Cultural Centre and Academy of Islamic Sciences. Led by the UM Health and Wellbeing Research cluster, the researchers came together during the first, rather chaotic

**“ Many expressed interests in doing a COVID-19 related project, but they come from different disciplines. So, we took advantage of their expertise and formed a group together. ”**

week of MCO, to form the project team.

Under the banner “Caring Together”, this group of researchers formed a community-oriented platform via Facebook (<https://www.facebook.com/caringtogetherum>) and the Telegram channel (<https://t.me/caringtogether>). These platforms are available to everyone inside and outside the campus. Interested participants are invited to



answer a preliminary online survey, in which their mental well-being is assessed. Results are available within a day of the survey submission, and a selection of ‘coping’ (interventional) programs are offered based on the results. Depending on the participants’ preference, they can choose programmes that focus on various aspects, from self-care to Islamic psychospiritual, arts, music, health education, and exercises. All these programmes are conducted via online sessions, hence are accessible to anyone with access to the internet.

Indeed, these programmes are timely when the community needs real help, and when everyone is confused and worried about the COVID-19 outbreak. “This idea came about during an online discussion with researchers. Many expressed interests in doing a COVID-19 related project, but they came from different disciplines. So, we took advantage of their expertise and formed a group together. It turned out to be an amazing journey. The community can choose what they like, and researchers can share their knowledge”, commented a representative from the Health & Wellbeing Research Cluster.

Every day, through the social media platforms like Facebook and Telegram subscribers of the programmes will receive tips and facts on coping with distress and anxiety. Subscribers are also invited to engage in talk shows hosted online. Recently, a sharing session was hosted with Mdm Nor Hainei, a recipient of the “Tokoh Guru Kebangsaan 2020” award, on the challenges faced by teachers and the coping mechanisms available for them. There was also a virtual health talk and

exercise session streamed for the elderly community.

This project is still active and welcomes anyone interested to participate in the survey (<https://camhepcovid19.typeform.com/to/eibFUF>) or to collaborate on any community-oriented programmes. It is hoped that “Caring Together” can be one of the platforms for UM researchers and students to channel their passion and expertise to the needful ones out there, in overcoming the COVID-19 pandemic. ■



### KESIHATAN MENTAL ADALAH PENTING UNTUK KEHIDUPAN YANG BERKUALITI

Kami prihatin terhadap anda. Sertai tinjauan kami hari ini. Kami menantikan maklum balas anda.

Pautan tinjauan: <https://camhepcovid19.typeform.com/to/eibFUF>



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#UMprihatin



SCAN ME!

## Increased vulnerabilities: The well-being of people who use illicit drugs in the era of COVID-19

**D**uring periods of restricted movement in the era of COVID-19, day-to-day operations are largely interrupted, with potentially serious repercussions to specific populations who are vulnerable. Specifically, such populations are like people who use illicit drugs (PWUD) who have traditionally experienced socioeconomic marginalization, stigma and discrimination, homelessness, transport barriers, poor access to health and social services, substance use disorder and underlying medical conditions. These factors can contribute to increased risk of contracting COVID-19 and serious illness due to the disease. Furthermore, the lack of innovative services in times of crisis to meet their health and social needs can exacerbate the detrimental impacts of COVID-19, leading to poorer levels of well-being.





For PWUD, continuous engagement in harm reduction services such as treatment for opioid use (i.e. medication assisted therapy) and needle-syringe exchange programmes are essential to prevent the transmission of blood-borne virus such as HIV and Hepatitis C. Harm reduction services are often supplemented by programmes that provide informational support to improve social determinants of health and referrals to health services including mental health support. In Malaysia, harm reduction services have been shown to avert new HIV infections among PWUD. However, interruption in these services during a pandemic can hamper long-term efforts to sustain low HIV infection rates and reduce access to appropriate services, potentially adding to the burden of disease in the healthcare system.

Several studies from other countries have documented the impact of COVID-19 on PWUD.



**Dr Nur Afiqah bt Mohd Salleh**  
Department of Social and Preventive Medicine

Although the use of illicit drugs have declined in general as a result of national confinement measures, there are concerns on the well-being of PWUD, especially when their access to health services have also been limited by these measures. For example, a study conducted in European countries have reported that there has been an increase in presentations

**“63.2% of individuals have reported that the increase in their drug use was due to worry and stress over the virus.”**

related to acute mental health issues, violence-related harms, withdrawal and relapses, compared with the pre-COVID-19 period, as the pandemic has limited the access to health services due to border closures. For some PWUD, the use of certain illicit drugs have been considered as a reliable coping mechanism, which has considerably intensified during the pandemic.

For example, in a

study conducted among 2000 participants in 12 countries, 63.2% of individuals have reported that the increase in their drug use was due to worry and stress over the virus.

In our local setting, there is very limited information on the extent COVID-19 has impacted the PWUD. For this reason, a study is conducted to explore the well-being of PWUD, including provision of their basic needs such as food and housing, access to social support and healthcare. Funded by the International Drug Policy Consortium, researchers from the faculty are working remotely with local community-based organizations, specifically organizations that provide HIV-related services, to reach out to vulnerable PWUD. It is hypothesized that there are more health and social needs which are not met during the pandemic compared to the months before the pandemic, potentially affecting mental health and psychosocial well-being within this population. Findings from this investigation will form the basis for an understanding of the public health responses to the outbreak which are tailored towards the needs of PWUD. ■

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## Research spotlights

■ A Novel MRI lipid imaging technique for diagnosis (and potential therapeutic intervention in) of brain tumour **p14**

■ 5' Nontranslated Regions of Cocksackievirus A16 and Enterovirus A71 affect their replication in neuronal cells **p16**

■ iCare Study - The Malaysian response **p18**

# A Novel MRI lipid imaging technique for diagnosis (and potential therapeutic intervention) of brain tumour

by Dr Seow Pohchoo, Associate Professor Vairavan Narayanan, Associate Professor Dr Jeannie Wong Hsiu Ding, Dr Aditya Hernowo, Professor Dr Norlisah Ramli

**G**liomatous tumors of the brain remain one of the few 'fortified' tumors, which, despite decades of improvement in imaging, surgical technique and adjuvant therapeutics, have not shown much improvement in

An increased rate of lipid synthesis has been recognised as a hallmark of cancer cells.

prognosis and survival. A diagnosis of Glioblastoma multiforme usually carries an average survival of 14 months from the time of diagnosis.

These tumors have highly diverse properties and growth patterns. Detailed study of the various metabolic characteristics is a relatively unexplored area for Gliomatous tumors. An increased rate of lipid synthesis has been recognised as a hallmark of cancer cells. Lipid quantification has vast, unexplored potential for diagnosis, grading, patient prognostication and therapeutic treatment. Thus, this research is steered towards MRI imaging to detect lipid distribution in these tumors. An additional motivating fact is that the brain is the highest fat-containing organ in our body.

Our study maps the lipid distributions of brain tumour regions using magnetic resonance imaging (MRI) in-and opposed phase (IOP) sequence. IOP is an MRI sequence where fat appears dark and is normally applied to other organs for fat suppression. We



The UM Glioma Lipidomic Group, formed in 2016;

from front:

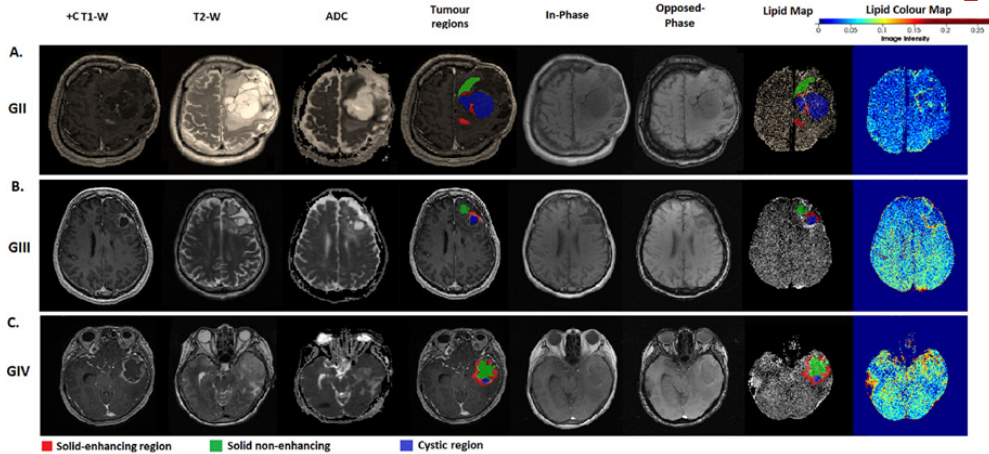
Associate Professor Dr Jeannie Wong Hsiu Ding, Dr Kamariah Ibrahim, Associate Professor Dr Vairavan Narayanan, and Dr Aditya Hernowo;

from front:

Dr Tan Li Kuo, Dr Seow Pohchoo, Professor Dr Norlisah Ramli, and Associate Professor Dr Azlina Ahmad Annuar

Not in the photo:  
Professor Dr Kartini Rahmat.





The various structural and diffusion of MRI images, tumour regions (colour labels according to different tumour regions) and lipid maps (first two columns on the right) for three glioma patients of different severities (Grade II: gemistocystic astrocytoma, III: anaplastic oligodendroglioma and IV: glioblastoma multiforme). The pseudo-colour lipid map in the first column on the right displays the lipid distribution of the whole brain.

constructed a whole-brain lipid map using pre- and post-processing methods to enable quantification of the lipid distributions in the tumour regions as a value termed as lipid fraction. Our initial findings demonstrated the potential of lipid fraction in the non-enhancing tumour region to discriminate the severity of the disease and high association with histopathological results, the gold standard assessment for brain glioma diagnosis. A higher value of lipid fraction implied a more severe disease.

Lipid mapping provides useful information on the lipid landscape in relation to the diverse

characteristics of glioma for diagnosis and grading. This technique adds to the surgical diagnostic yield by identifying biopsy targets and facilitating prognostication. It can also be used as an adjunct

tumor grading tool as well as to provide information on lipidomics landscape in glioma growth.

Our next goal will be to understand the tumour biology and the underlying mechanism of tumour growth in relation to lipid metabolomics. The main limitation is that the molecular mechanisms that lead to changes of lipid compositions in tumour tissues remain unclear despite advances in molecular biology. Thus, we will extend our future works to lipidomics, a powerful new research area to investigate lipid pathways that play important roles in cell biology and progress of cancer-related disease. ■

### Acknowledgement

We gratefully acknowledge the contributions of the clinicians, lecturers, researchers and staff from the UM Glioma Lipidomic Group, Department of Biomedical Imaging, Department of Surgery, University of Malaya Research Imaging Centre (UMRIC), UMMC MRI radiographers that are involved in the scanning, and CIGMIT anaesthesiologists, nurses and staff.



Group photo after viva-voce presentation of the glioma lipid mapping research.

# 5' nontranslated regions of coxsackievirus A16 and enterovirus A71 affect their replication in neuronal cells

by Associate Professor Dr Ong Kien Chai, Professor Dr Wong Kum Thong

Our research team, led by Honorary Professor Dr Wong Kum Thong and Associate Professor Dr Ong Kien Chai, has been actively conducting research in the area of neuroscience and pathology with a special focus on infectious disease pathology and central nervous system viral infections. The main interest of our team is the development of viral detection reagents (probe, monoclonal antibody) and pathogenesis of neurotropic enteroviruses (Enterovirus A71, Coxsackievirus A16, Enterovirus D68), rabies virus and flaviviruses (dengue, japanese

encephalitis virus) infection in cells, human tissues and animal models.

Enterovirus A71 (EV-A71) and Coxsackievirus A16 (CV-A16) are closely related enteroviruses that cause hand, foot and mouth disease (HFMD) in children. Despite their virologic and biologic similarity, serious neurological complications, almost always occur in EV-A71 infection; rarely so in CV-A16 infection. In an attempt to answer this observation, we compared virus replication and host transcriptomic response in EV-A71 and CV-A16 infected SK-N-SH (neuroblastoma/neuronal) cells. This work was selected as the Faculty of Medicine Best Neuroscience Publication for the year 2018 (Basic Science category).

We found that CV-A16 replication in SK-N-SH cells was lower compared to EV-A71. Real-time quantitative polymerase chain reaction showed that radical s-adenosyl methionine domain containing 2 (RSAD2) expression was the highest up-regulated interferon stimulated gene, which is responsible for the suppression of CV-A16 replication compared to EV-A71 (Figure 1). The notion that RSAD2 expression may be responsible for the limitation of CV-A16 viral RNA copies and

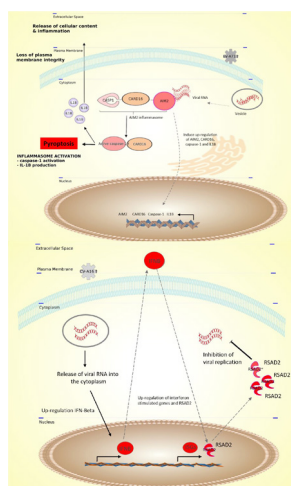


Figure 1: A schematic model of RSAD2 inhibition of CV-A16 replication.

Upon infection of target cells, the presence of CV-A16 RNA in the cytoplasm leads to the activation of signaling pathways that regulate IRF1 to induce type I IFN expression. Secretion of IFNβ, signals the receptors in the regulation of a positive feedback loop and induces the production of interferon stimulating genes (ISGs) such as RSAD2. RSAD2 inhibits CV-A16 replication in an unknown manner.

Figure 2: A schematic model of EV-A71 induced pyroptosis.

AIM2 inflammasome receptors directly recognizes viral RNA in the cytoplasm. AIM2 interacts with CARD16 to activate caspase-1 to produce cleaved caspase-1 p20 subunits. Caspase-1 also causes the maturation and secretion of IL-1β which is a pro-inflammatory cytokine and elicit cell death via pyroptosis.





Figure 3: The hand, foot and mouth disease research team (from left: Honorary Professor Dr Wong Kum Thong, Dr Tan Soon Hao, Dr Hooi Yuan Teng, Munira Mohamed Hamidi, Ang Wei Xin, and Associate Professor Dr Ong Kien Chai.

titers was strengthened by the observation that RSAD2 knockdown in SK-N-SH cells reduced RSAD2 expression, leading to increased viral RNA copies and titers. There was no correlation between RSAD2 expression, viral copies and titers in EV-A71 infected SK-N-SH and RSAD2-knockdown cells. Conversely, absent in melanoma 2 (AIM2), which is associated with pyroptosis, was upregulated in EV-A71-infected neurons but not in CV-A16 infection, suggesting that the AIM2 inflammasome played a significant role in suppressing EV-A71 replication. AIM2 inflammasome-mediated pyroptosis is a programmed cell death mechanism that could limit viral replication (Figure 2) and at the same time causing IL-18 and IL-1 $\beta$  immune responses.

A CV-A16 infectious clone and a chimeric virus with the 5'nontranslated region (5'NTR) exchanged with EV-A71 5'NTR were constructed to determine the influence of 5'NTR of the respective viruses on viral replication and gene expression. The differences in viral replication, RSAD2 and AIM2 expressions observed earlier between parental CV-A16 and EV-A71 viruses were reversed in chimeric CV-A16 combined with EV-A71 5'NTR, and chimeric EV-A71 combined with CV-A16 5'NTR. This suggests that the CV-A16 5'NTR and EV-A71 5'NTR played an important role in RSAD2 and AIM2 up-regulation and limitation

of CV-A16 and EVA71 replication, respectively. The differences in 5'NTR secondary structure of CV-A16 and EV-A71 are shown in Figure 3.

In conclusion, the significance of our research is in the identification of the various molecular mechanisms observed in CV-A16 and EV-A71 neuronal cell infection that may account for the lower incidence of CV-A16 associated neurological complications in HFMD outbreaks and the greater propensity of EV-A71 for neuronal injury. We further showed that viral 5' NTRs may play significant roles in eliciting different host response mechanisms. In the case of CV-A16, its 5'NTR appears to induce neuronal cells to produce RSAD2 to limit viral replication while in EV-A71, its 5'NTR appears to determine AIM2 expression to do the same.

We believe that a better understanding of the mechanisms of viral infection and host responses is important in developing therapeutic and preventive strategies to reduce the incidence and severity of CNS complications especially in EV-A71 infection. We are in the process of identifying and developing antiviral agents that could possibly ameliorate the disease and its complications, using animal models that we have previously developed. ■

# iCARE Study – The Malaysian Response

**T**he COVID-19 pandemic has impacted everyone all over the world. A highly contagious virus with no vaccine, and the key to slowing the spread of the COVID-19 disease—and successful transitioning through the phases of the pandemic, is public adherence to rapidly evolving behaviour-based public health policies. Thus, the iCARE study was developed with the overall aim to assess attitude, responses, concerns and impact of the pandemic internationally.

The study was approved by the Research Ethics Committee of the CIUSSS-NIM (Montreal, Canada) and utilises an ONLINE multiple cross-sectional survey design to capture self-reported information on a variety of COVID-19-related variables from individuals around the world. The survey data is captured using two data-capture methods, namely convenience and representative samplings. The study is led by principal investigators from Canada, with

150 researchers from over 40 countries. Data collection is conducted in monthly waves, to capture the evolution of the responses. Data from Wave 1 (March 27 to May 6), Wave 2 (May 7 to June 8) and Wave 3 (June 8 to July 22) have been collected while Wave 5 will start in September 2020. This study has been translated into more than 30 languages including Bahasa Malaysia.

If you would like to participate in the survey, please click on any of the links:-

Malay: [shorturl.at/ejxNZ](https://shorturl.at/ejxNZ)

English: [shorturl.at/eyBIL](https://shorturl.at/eyBIL)

Chinese: [shorturl.at/rKLYO](https://shorturl.at/rKLYO)

Overall, the iCARE study will provide real-time evidence to help international researchers understand the differing impacts of COVID-19 policies and communication strategies around the world.

It will provide evidence for the effectiveness of evolving country-level policies that are implemented to reduce the spread of the virus, – both in general and among key sub-groups (for example, younger vs older, ethnic minorities, those with health conditions). The study will also generate evolving evidence to support public health planning, decision-making and responses around the world, including those in low and middle-income countries. We are interested in the responses of Malaysians to the prompt and thorough actions of the Deputy General of Health and their attitude and behaviour related to their daily lives with regard to the pandemic. ■



Malaysian Collaborator  
Associate Professor  
Dr Loh Siew Yim  
Email: [syloh@um.edu.my](mailto:syloh@um.edu.my)

To participate in the survey, please scan any of the following QR code.



Malay



English



Chinese



# SMART - PLS for PLS-SEM

(Partial Least Squares Structural Equation Modelling)



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Keynote Speaker:

**Dr Mahmoud Danaee**

**DR MAHMOUD DANAEE**

is currently a Senior Lecturer, Department of Social Preventive Medicine (SPM), Faculty of Medicine, University of Malaya. As a statistician for the last 23 years, he has taught courses in statistical experimental design, advance statistical methods, research methodology at the postgraduate level in different disciplines. Dr. Mahmoud was in charge of the Research Methodology and Statistic Help Clinic (ReSH) at the Academic Enhancement and Leadership Development Centre (ADEC) during 2016-2018 in conducting and analysis of research.

**About the workshop**

*This course is aimed at researchers who need to learn and use structural equation modeling analysis through SEM -PLS approach for their research. The course introduces Smart - PLS software for SEM - PLS analysis.*

**Course Outline:**

1. Introduction and basics of Partial least squares Path Modelling
2. Assumptions of PLS
3. Exogenous and Endogenous Variables
4. Import data to Smart - PLS from Excel
5. Reflective and Formative Measurement
6. Reflective Measurement Models
  - a. Internal Consistency Reliability
  - b. Convergent Validity
  - c. Discriminant Validity
7. Formative Measurement Models
  - a. Convergent Validity
  - b. Collinearity Assessing in Formative Measurement Models
  - c. Assessing the Formative Indicators
8. Second Order Model
9. Evaluation of the Structural Model
  - a. Collinearity Assessment
  - b. Structural Model Path Coefficients
  - c. Coefficient of Determination ( $R^2$  Value),  $Q^2F^2$
  - d. Mediating effect
  - e. Moderating effect (Interaction, Multiple group)

**18-19  
NOVEMBER**  
**8am - 4pm**

**Venue:**

**The Cube, Level 4,  
Faculty of Medicine  
University of Malaya**

**Fees:**

**RM300 (UM Student)  
RM400 (UM Staff)  
RM500 (Non-UM)**

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# Comparing notes in COVID-19 control: The Malaysian & Taiwan Experience

by Mrs Zura Syazleena Hamizan, Professor Dr Ong Teng Aik

**T**he novel coronavirus (COVID-19) has become a global pandemic, spreading to more than 182 countries and territories since its first outbreak in December 2019. It is clear that the impact of COVID-19 goes far beyond the immediate challenges that the health sector is facing.

On 15th July 2020, the faculty, with the support of the Internationalisation Unit, Faculty of Medicine (IUFOM), had the first webinar with Chang Gung Memorial Hospital (CGMH), Taiwan. Taiwan is one of our close partners and to have the sharing session with CGMH was a great opportunity for us to strengthen the ties between the two institutions.

Taiwan is known as one of the regions in Asia which has

controlled the outbreak of the coronavirus in an exemplary manner.

The main objective of the webinar was to share the experiences of Malaysians and Taiwanese in responding to COVID-19. The panellist from UM and CGMH shared their insights on:

1. The overall Covid-19 situation in Malaysia and Taiwan
2. The overall response and management of the epidemic
3. Social protection and economic measures that have been put in place to support vulnerable populations
4. Lessons learned and recommendations.

Having learnt the lessons of SARS in 2003, Taiwan through the Central Epidemic Command Center (CECC), undertook swift action and

issued 124 relevant measures to reduce the risk of infection. The prevention strategies taken include the quick announcement of travel alerts, optimization of border quarantine, reinforcement of 14-day home quarantine, upgrade of the healthcare system for infectious disease, adequate supply of personal protective equipment (PPE) and other medical materials, and promotion of education and communication on hygiene.

Both institutions have strictly followed similar preparedness in protocols to prevent nosocomial infection, focusing on viral transmission from community to hospital and the outbreak in the hospital. Enhanced traffic control bundling (eTCB) and patient risk stratification (triage prior to entering hospitals, monitoring of



body temperature, travel, occupation, contact, and cluster history (TOCC), recognising respiratory symptoms, setting up of alcohol dispensers at every checkpoint, maintaining social etiquette and observing social distancing, and requiring everyone to wear surgical mask were measures implemented in hospitals. With regards to the medical staff, they were to avoid cross contacts, were placed in separated offices among the same group and were encouraged to conduct video conferencing. All medical staff were also given essential and updated information on COVID-19. In addition, their body temperature and health conditions were monitored daily and they were provided with sufficient surgical masks, alcohol dispensers and PPE.

Although Malaysia has done relatively well in containing the spread of the COVID-19 as compared to many other countries, nevertheless there is much that Malaysia can learn from Taiwan especially on preparedness at the government level, hospital level and population level.

### Government level

1. Early border control to ban entry of visitors from high risk areas and to impose

### UM Panellist

1. Associate Professor Dr Sharifah Faridah bt Syed Omar - Infection Control
2. Associate Professor Dr Sasheela a/p Sri La Sri Ponnampolavanar - Infection Control
3. Professor Dato' Dr Adeeba Kamarulzaman - Chairperson

a 14-day quarantine period for citizens returning from high risk areas

2. Taiwan utilized its national health insurance database and integrated it with its immigration database to check an individual's status for the hospital to alert and stratify
3. Proactive case contacts surveillance: case finding and containment - test, isolate, and quarantine;
4. Resource allocation: promoting mask at the national level, early PPE production, setting of price and, limit purchase of

### CGMH Panellist

1. Dr Chun-Wen Cheng - Division of Infectious Disease
2. Associate Professor Dr Shu-Min Lin - Division of Thoracic Medicine
3. Professor Dr Jacob See-Tong Pang - Chairperson

important health equipment, government/military personnel support;

5. Reassurance and education of the public through daily press briefing, travel risk advisory, wearing of masks and promoting hand hygiene.

Hospital Level - Majority of the hospitals in Malaysia have similar strategies to that of CGMH.

Population level - Taiwanese are attentive on all updates related to the COVID-19 pandemic. The government made it compulsory in late January for all Taiwanese to wear face masks in public, to practice social distancing and to wash their hands frequently.

The webinar session was indeed a beneficial sharing session. It helped to contribute to a global exchange of experiences that could increase understanding of the challenges and solutions, improve the effectiveness of cross-disciplinary responses and leverage cooperation between the two institutions.



# The ASEAN-US Science Prize for Women 2020

► **Awardee** Associate Professor Dr Chan Yoke Fun (Department of Molecular Medicine)

**C**ongratulations to Associate Professor Dr. Chan Yoke Fun on winning the ASEAN–U.S. Science Prize for Women 2020. This yearly competition, held in partnership with the United States Government, ASEAN and Underwriters Laboratories, recognizes the academic and professional achievements of female scientists. In particular, the award recognises the roles of female scientists in improving society in sustainable ways and as role models for other women working in science and technology.

Dr. Chan competed with other researchers from the ASEAN region before being shortlisted as the top two finalists. In the final round of judging, she participated in a head-to-head pitch competition that was held in June 2020 during the ASEAN – U.S. Consultation Meeting on Science, Technology and Innovation, before being announced as the winner. Dr. Chan will receive an award of USD 20,000.

Dr. Chan is a virologist working in the area of emerging viruses such as enterovirus A71, chikungunya and respiratory viruses. One of her research areas focuses on how enterovirus A71 virus causes hand, foot and mouth disease, and brain infection in children. This

**“Battle wisely, there is no courage without fear; there is no success without failure.”**

current award adds to a list of the many accolades that Dr Chan has received including the Asian Women Entrepreneurs Leadership Award: Category Science and Environment (2019), L’Oreal – UNESCO International Rising Talent (2015), and L’Oréal-UNESCO For Women in Science National Fellowship Program (2014).

Dr. Chan recognises the challenges faced by women working in science. “As a female academician, I have many hats to wear. Scientist, teacher, manager at work and back home; wife and mother. It is difficult

to change the perception that women scale back at work after marriage and motherhood. In fact, I think all working mothers just stretch themselves instead of doing less. We still put 100% at work and 100% at home. We need to prioritize tasks, change work habits, get help and get used to being imperfect”.

Her words of wisdom for all researchers; “Battle wisely, there is no courage without fear; there is no success without failure”.

Our heartiest congratulations to Dr. Chan on this prestigious achievement. ■



FREE HANDS-ON WORKSHOP

# UM MATLAB HANDS-ON WORKSHOP

9AM TO 4PM 21 & 22 OCTOBER 2020

Via ZOOM

Limited to 20 Pax only



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Speaker:  
**Sruthi Geetha**

Customer Success Engineer  
Techsource Systems

Sruthi Geetha is a Customer Success Engineer at TechSource Systems, Singapore. She works to improve the adoption of MATLAB and toolboxes in universities around South East Asia. Prior to joining TechSource Systems, Sruthi was with MathWorks, the developer of MATLAB and Simulink software. She had spent 3 years at MathWorks, India, with experience in Customer Training, Customer Success Engineering and Technical Support. Her expertise in MathWorks tools, and background in Controls and Instrumentation, has helped multiple customers build their technical applications. Sruthi received her Master of Technology in Instrumentation and Control Engineering from National Institute of Technology, Tiruchirappalli, India and Bachelor of Technology in Chemical Engineering.

She has built her forte in Data Analysis with MATLAB, Control Systems Design, Robotics, Model Based Design using Simulink and Simscape, MATLAB/Simulink Algorithm for Automatic Code Generation and Optimization with MATLAB.

## Topics Covered:

- Introduction to MATLAB Programming
- What is MATLAB?
- Optimization with MATLAB
- Image Processing
- Machine Learning
- Deep Learning



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# Discovering the therapeutic benefits of NevGro® through private-public collaboration

► **Gold medal** Dr Wong Kah Hui (Department of Anatomy)  
Dr Lew Sze Yuen (Department of Anatomy)  
Dr Lim Lee Wei (The University of Hong Kong)

Malaysia Technology Expo 2020 (MTE2020) - The 19th International Expo on Inventions & Innovations (Category: Invention & Innovation Awards 2020).

**N**EVGRO® is a *Hericium erinaceus* (Lion's Mane mushroom or Cendawan Bunga Kobis) based-dietary supplement that targets on maintaining general health. It is an affordable alternative to internationally recognised mushroom supplements for Malaysians. Researchers from University of Malaya and University of Hong Kong investigated the phytochemical constituents of NevGro® and its protective effects against oxidative stress induced by L-Buthionine sulfoximine (BSO) in fibroblasts derived from patients with Friedreich's ataxia (FRDA). FRDA is a rare neurological disorder that causes progressive damage in nervous system and movement problems.

The findings suggest the ability of NevGro® in attenuating BSO-mediated cytotoxicity in FRDA fibroblasts through its exogenous antioxidant



The gold medal award-winning team photo taken at the Malaysia Technology Expo 2020 (MTE2020) held at Putra World Trade Centre Kuala Lumpur 20-22 Feb 2020. From Left to Right: Mong Yih Kong (Ganofarm R&D Sdn Bhd), Lim Siew Huah (Faculty of Science, UM), Wong Kah Hui (Department of Anatomy), Cheng Poh Guat (Ganofarm R&D Sdn Bhd), Lew Sze Yuen (Department of Anatomy) and Lim Lee Wei (The University of Hong Kong).

capacity in maintaining plasma membrane integrity, regulation of intracellular antioxidant defense mechanisms of glutathione and superoxide dismutase, and suppression of reactive oxygen species (ROS) accumulation. These effects are closely linked to the active components (adenosine and herierin III) isolated from NevGro®. Additionally, much emphasis is placed on building innovation-based collaborations between Ganofarm R&D Sdn Bhd with University of Malaya and University of Hong Kong, directed at fostering research and commercialisation.

With the support of IPPP UM, the research project received a gold medal at the Malaysia Technology Expo 2020 (MTE2020) - The 19th International Expo on Inventions & Innovations (Category: Invention & Innovation Awards 2020). ■

# DATA ANALYSIS WITH

The most widely used language in Data Science and Analytics

# R

THE MOST FUNDAMENTAL STEPS IN STATISTICAL ANALYSIS NAMELY EXPLORATORY DATA ANALYSIS (EDA) USING FUNCTIONS IN R

## ABOUT THE WORKSHOP

The R programming language is the most widely used language in Data Science and Analytics. With the rise of Big Data and Data Science, its growth in popularity is boundless. The purpose of this workshop is to provide training in conducting and understanding the most fundamental steps in statistical analysis namely Exploratory Data Analysis (EDA) using functions in R.

EDA is a key of the part science process because it allows the researcher to understand data before further analysis, gain information on the requirement needed to ensure data quality, choose appropriate statistical methods to conduct inferential statistics and statistical modeling, provide insights for new issues to be researched other than describing data. This two (2) days workshop prepares participants with the skills on how to effectively use R for EDA.

## TOPICS COVERED

- Introduction to R
- Data preparation for analysis
- Getting data set into R
- Exploring: Data set (Data frame), Outliers, Missing Values, Data distribution and exploring Relationship
- Descriptive statistics
- Inferential Statistics

## ABOUT THE SPEAKER

## EVENT DETAILS



### DR MAHMOUD DANAEE

**23 years of experience as statistician**

Dr Mahmoud is currently a Senior Lecturer, Department of Social Preventive Medicine (SPM), Faculty of Medicine, University of Malaya. As a statistician for the last 23 years, he has taught courses in statistical experimental design, advance statistical methods, research methodology at the postgraduate level in different disciplines. Dr. Mahmoud was in charge of the Research Methodology and Statistic Help Clinic (ReSH) at the Academic Enhancement and Leadership Development Centre (ADeC) during 2016-2018 in conducting and analysis of research

**DATE:**

**9-10 November 2020**

**TIME: 8.30am - 4.30am**

**VENUE:**

The Cube, Level 4,  
Faculty of Medicine,  
University of Malaya

**FEES:** RM300 (UM Student)  
RM400 (UM Staff)  
RM500 (Non-UM)

## CONTACT US



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## Awards

# Are you ready for FameLab? From “Doing Science” to “Talking Science”

Dr Tan Choo Hock (Department of Pharmacology)

► **Second Runner-up & Finalist**

**Famelab Contest - National Finale 2020**

**Topic: Confronting snakebite, the silent global killer.**

Dr Felicitas Fedelis A/P Juso (Department of Physiology)

► **Finalist**

**Famelab Contest - National Finale 2020**

**Topic: Fanning the flames within: The difference between severity and recovery**

**W**ould you like to share your passion and inspire a live general audience with your work in science, technology, engineering or mathematics (STEM) – in just three minutes?

If your answer is yes, FameLab is the platform for you. FameLab is the world's leading competition in science communication. It aims to identify, develop and mentor young communicators in all aspects of STEM. Contestants have three minutes to win over the judges and audience with a scientific talk (usually related to his or her field of study) that is excellent in terms of its content, clarity and charisma of the contestant.

The first FameLab

Contest was held at the Cheltenham Festival in 2005. Subsequently, British Council partnered with the Cheltenham Festival in 2007 and took the competition worldwide. Each year, national champions from participating countries (including Malaysia) gather in Cheltenham for the FameLab International Final. Malaysia is ever proud to have two of her scientists crowned the FameLab International Champion at the previous Cheltenham Science Festival: Professor Dr Veerakumarasivam (2016) and Dr Siti Khayriyyah Mohd Hanafiah (2018).

This year, two academic staff from the University of Malaya participated the Malaysia FameLab Contest. They

are Dr Tan Choo Hock from the Department of Pharmacology and Dr Felicitas Fedelis A/P Juso from the Department of Physiology, Faculty of Medicine. Dr Tan won in the Central Regional Heat, and together with Dr Felicitas and ten other finalists from all over Malaysia, took part in the National Finale 2020 which took place on 9th July 2020 at the MIGHT Partnership Hub, Cyberjaya. Dr Tan won the second runner-up place with his talk on “Confronting snakebite, the silent global killer.” Dr Felicitas equally impressed the audience with her talk on “Fanning the flames within: The difference between severity and recovery”.

The Faculty would like to congratulate Dr Felicitas and Dr Tan for their achievements. Young scientists are highly encouraged to take part in the event. ■



Finalists at the Malaysia FameLab Finale 2020. Dr Felicitas (first left) and Dr Tan (third right) were both from the Faculty of Medicine, UM.



**FOR CLINICAL  
MASTERS  
CANDIDATE**

# PLANNING YOUR RESEARCH PROJECT FOR THE MASTERS DEGREE: A PRIMER FOR THE CLINICAL MASTERS CANDIDATE

Date: 30 November 2020  
Venue: The Cube, Level 4,  
Faculty of Medicine,  
University of Malaya



**Speaker: Prof Dr Kulenthiran Arumugam**  
MBBS (Spore), FRCOG, MD, PhD, Dip.Epid.(Lond)

## COURSE OUTLINE:

1. Formulate a study hypothesis
2. Discover the best research design to prove that hypothesis,
3. How to collect and record data,
4. Calculate sample size
5. Determine appropriate statistical test
6. How to write up his proposal.

## OBJECTIVE

To equip the Clinical Masters Student with the necessary skills to embark on a study so as to fulfill one of the requirements of the Masters Degree.

After the course, the participants will then be able to confidently embark on his research study well focused.

## ABOUT THE SPEAKER

Professor Kulenthiran Arumugam has been a clinician for more than 40 years. He is also a distinguished researcher having the rare distinction of holding two Doctoral theses, an MD and a PhD, both from the University of Malaya. He is a trained Epidemiologist from the London School of Hygiene, University of London. His interest and specialty are in clinical epidemiology. In addition, he has a Certification in Advanced Epidemiological Analysis from the London School of Hygiene, Practical Statistics for Medical Research from University College London, and in a Certification in the Conduct of Clinical Trials, University of Bristol. He has run a number of workshops, in Clinical Epidemiology in particular, in the area of evaluating a diagnostic test. He is well versed with the STATA Statistical software and in medical research.

## FEES

RM150 (UM Staff and student)  
RM300 (Non-UM)

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