

MSPP NEWSLETTER

March 2022



Editorial Message

Dear MSPP Members,

May this year's first newsletter find you all well and hope your year has already gotten off to a great start. Although we are already in March, I hope it's not too late for us to wish everyone a happy belated New Year!



It's already 2022, and Covid-19 is still around 😞 Who would've thought that we would still have to wear facemasks 2 years from the time the virus entered our shores! That being said, the pandemic did bring some blessings in disguise. We are now connected more than ever, with MSPP programs and events having become easily accessible wherever you are. And we are able to bring you multi-national speakers for our 34th MSPP Scientific Meeting and Global Lecture series who are thousands of miles across the seas without having to pay for their air fares! ➔

This year, we want to reach out to you and engage more actively with our MSPP members. How can you get involved? Please be sure you have renewed your membership, and register for our Members Network Initiative and Meet the Members - Webinar Series (details inside this issue). We sincerely hope that being part of MSPP gives you a sense of belonging, networking opportunities, and flashes of inspirations ✨

We are also proud to announce our upcoming 35th MSPP Scientific Meeting 2022 to be hosted by Universiti Teknologi MARA in July. There was initially much contemplation as to whether the conference should be held virtually, physically or hybrid. But after much thought and taking members' opinion through surveys into consideration, I believe the organizing committee has made the right choice to have it virtually once again, due to the rising omicron-related cases. Registration is now open, and I hope to 'see' everyone there 🖥️

Till then, take care & stay safe! ❤️



Assoc. Prof. Dr. Izuddin Fahmy Abu
izuddin@unikl.edu.my
MSPP Newsletter Editor

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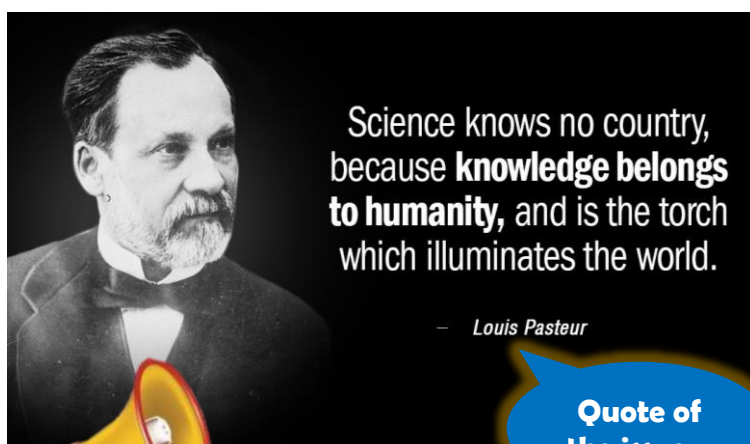
<http://www.mspp.com.my/>



[Malaysian Society of Pharmacology & Physiology](#)



[mspp.secretariat](#)



— Louis Pasteur

Quote of
the issue...



Be a contributor for MSPP Newsletter.
Send your articles/write-up to us at:
mspp.secretariat@gmail.com

MSPP President's Special Feature



My Teaching Philosophy

Medical Pharmacology is an exciting discipline that offers multiple challenges to medical educators. The effective teaching of pharmacology requires a comprehensive understanding of the medical sciences — physiology, pathology, biochemistry, and microbiology — and the ability to interrelate these sciences with the science of pharmacology. Whilst pharmacology is the 'study' or science of drugs, therapeutics is the application of this science. Teaching becomes more effective when we understand how people learn. People learn better when they see the relevance of the learning material. Selecting the appropriate information and presenting it in the correct context will show relevance. Appreciating relevance helps learning make more sense and seeing the relevance and applicability motivates one to learn more. I believe that it is crucial for every medical student to recognize the importance of knowing about drugs as they will continue to work with these drugs in their career. To be fair to patients, the risk against potential gain should be carefully considered before a drug is used. This can be done only if one knows the pharmacodynamics and the pharmacokinetics of the drug, including their interactions with food and other drugs.

Over the years, I have come to recognize that there are a number of concepts that can be especially challenging for some students to grasp, which inevitably affects their ability to apply these concepts.

The experience I have accumulated over the years has showed me that these concepts should initially be conveyed in the simplest manner, using 'everyday' language (as opposed to difficult scientific jargon or complex language). I have always strived to convert 'difficult' learning materials to simple ones as I believe that keeping it simple is making it explicit. Looking back on my years as a student, I find that the subject areas I remember most are the ones that were taught by teachers who simplified their subjects without compromising on importance.



Prof. Dr. Nafeeza with some of her students and colleagues

I find gratification when guiding students through an active process of acquiring knowledge. The skills they acquire through this process will help them identify evidence-based knowledge relevant to a context, regard changes as an opportunity to enhance learning, and make them life-long learners. As an educator, I contribute to knowledge advancement through publications and presentations on my research. Teaching and research complement each other very well as both aspects require active and thorough thinking through of ideas and putting forth these ideas in a logical manner. As I am committed to continually improve myself as an educator, I regard students' evaluations as something which can guide individuals to become better educators.

By Prof. Dr. Nafeeza Mohd Ismail
MSPP President 2020/22
nafeeza06@hotmail.com

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March 2022



MSPP Refresher Course 2021

MSPP has been organizing refresher courses annually with the aim to promote and refresh the basic pharmacology and physiology knowledge of the selected topic. This course is an important avenue for academicians, especially the junior ones. This year, the refresher course was conducted on 18th November 2021 via Zoom platform.

The physiology topic, 'The Autonomic Nervous System' was delivered by Asst. Prof. Dr. Aszrin Abdullah from International Islamic University Malaysia (IIUM), while the pharmacology topic, 'Pharmacodynamics: Drug-Receptor Interactions' was delivered by none other than MSPP's President, Prof. Dr. Nafeeza Mohd Ismail from International Medical University.

Both of our prominent speakers have highlighted important points and tips in teaching the topics. Asst. Prof. Dr. Aszrin will share her upcoming e-book entitled 'The Autonomic Nervous System Physiology' to MSPP members.



MSPP REFRESHER COURSE 2021

18 NOVEMBER 2021 (THURSDAY)
8:45 AM - 12:10 PM
ONLINE ZOOM PLATFORM

9:00 - 9:30 AM
Welcoming Remarks by Prof. Dr. Nafeeza Mohd Ismail (President of MSPP)
"Medical Sciences and Clinical Sciences - A Weak Link in Teaching & Learning"
Moderator: Dr. Azlini Ismail (IIUM)



10:50 - 11:50 AM
Pharmacology Refresher Course Lecture by Prof. Dr. Nafeeza Mohd Ismail (IMU)
"Pharmacodynamics : Drug-Receptor Interactions"
Moderator: Dr. Azlini Ismail (IIUM)

9:30 - 10:30 AM
Physiology Refresher Course Lecture by Asst. Prof. Dr. Aszrin Abdullah (IIUM)
"The Autonomic Nervous System"
Moderator: Dr. Mohd Helmy Mokhtar (UKM)



FEES:
• MSPP Members - FREE
• Non MSPP Members - RM 20

TARGET PARTICIPANTS:
• Junior Lecturers, Lecturers
• Postgraduate Students

REGISTRATION LINK:
<https://forms.gle/wAtXv76bne9vN3hk8>

OR SCAN



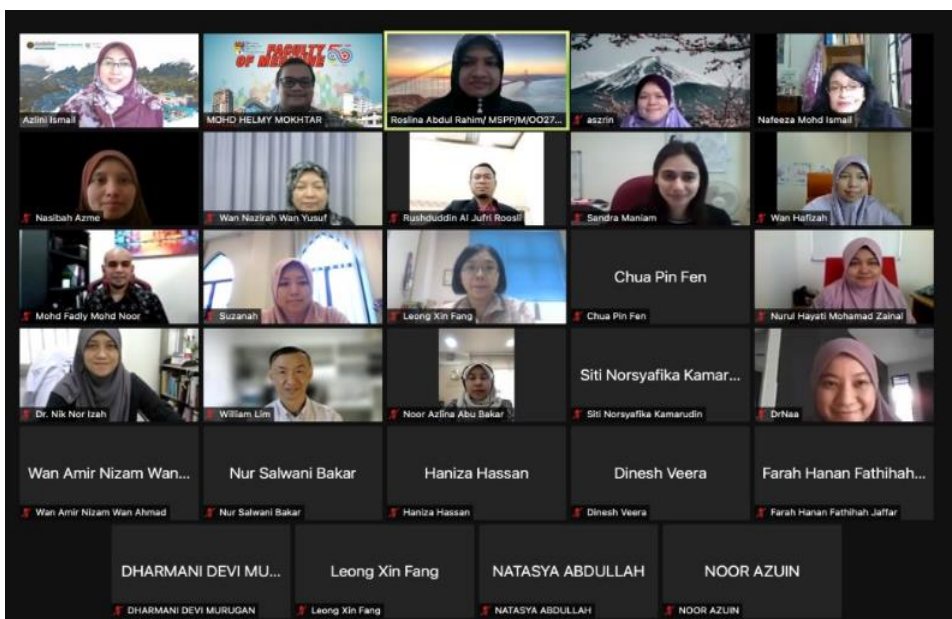
Zoom Meeting Link for Webinar Will Be Given Later to the Registered Participants

Organiser:
Malaysian Society of Pharmacology and Physiology



Co-Organiser:
International Medical University (IMU)





Most of our participants were satisfied with program conducted and praised the committee for conducting the program despite the COVID-19 epoch.



By Assoc. Prof. Dr. Roslina Abdul Rahim
Chairman for MSPP Refresher Course 2021
roslinaar@iium.edu.my

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MSPP 3rd Global Lecture Series

The **GLOBAL LECTURE SERIES** third edition was delivered by Dr. Ian Lake, a general practitioner in the UK on the 20th August 2021 via Zoom platform. The lecture titled 'Type 1 Diabetes: A Personal Story' was attended by 38 participants.



GLOBAL LECTURE SERIES

Date: 20 August 2021, Friday

Time: 6:00 PM – 7:30 PM (Malaysian Time)

<https://imu-edu-my.zoom.us/j/91394244872>

Type 1 Diabetes: A Personal Story

The talk will compare the data from usual care high carb diets with keto diets and would address the metabolic rationale for keto diets in type 1 diabetes. It will also include a practical demonstration of the theory with a short talk on the zero five 100 project.

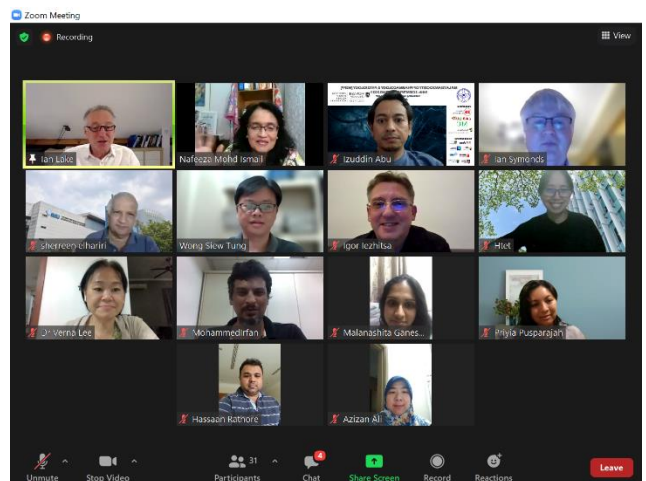
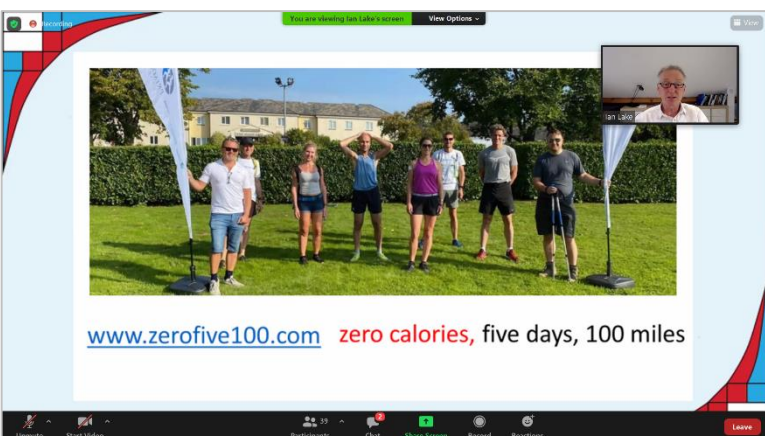
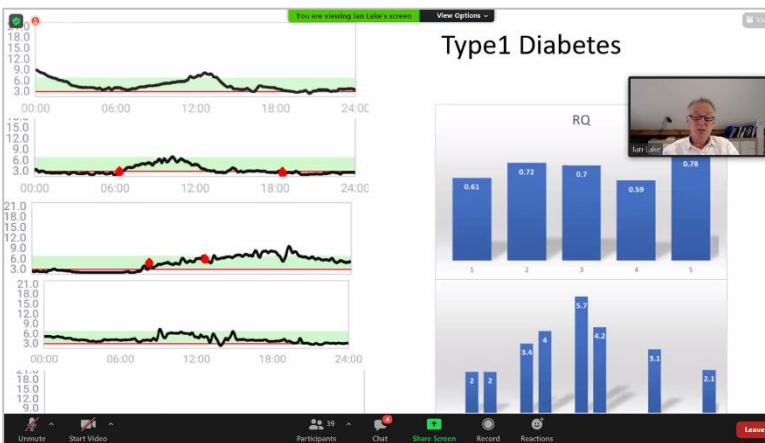
SPEAKER



Dr. Ian Lake is a GP in the UK. He has had a long term interest in preventive medicine, in particular role of low carb diet in the management of diabetes. He is a founder member of the Public Health Collaboration in UK. He despite having type 1 diabetes, completed a 5 week solo and unsupported run of 700 miles on just 9% carbohydrate. Last year he took it to a whole new level by organising a 100 mile team run over five days fully fasted. He will discuss this project and also ketogenic diets in Type 1 diabetes in his presentation.

MODERATOR

Prof Dr Nafeeza Mohd Ismail
Immediate Past Dean
Founder Global Lecture Series,
School of Medicine, IMU
President, Malaysian Society of
Pharmacology & Physiology
Consultant Lifestyle Medicine on Metabolic Health, UPSC



MSPP 4th Global Lecture Series



MALAYSIAN SOCIETY OF PHARMACOLOGY AND PHYSIOLOGY (MSPP)



INTERNATIONAL MEDICAL UNIVERSITY MALAYSIA

GLOBAL LECTURE SERIES

Date: 24 September 2021, Friday

Time: 6:00 PM – 7:30 PM (Malaysian Time)

<https://imu-edu-my.zoom.us/j/97709841465>

Medication Reduction, Continuous Glucose Monitoring and Remission of Diabetes Mellitus Type 2

Carbohydrate restriction is an effective clinical intervention in Metabolic Syndrome, PreDiabetes, Type 2 Diabetes, Type 1 Diabetes, Maturity Onset Diabetes Of Youth (MODY) or Latent Autoimmune Diabetes Of Adulthood. The goal of this talk is to close the gap among the clinical evidence, basic science, and pharmacology of Type 2 Diabetes for the practical application and teamwork needed to facilitate safe medication reduction in the primary care setting.

SPEAKER



Mark Cucuzzella MD FACP
Professor West Virginia University School of Medicine
WVU Center for Diabetes and Metabolic Health

Dr. Mark Cucuzzella, Professor West Virginia University School of Medicine, Air Force Reserve Lieutenant Colonel (ret). Mark's current research interests are in the use of continuous glucose monitors for diabetes remission and therapeutic carbohydrate reduction for severe pediatric obesity

The GLOBAL LECTURE SERIES 4th edition was delivered by Prof. Dr. Mark Cucuzzella on 24th September 2021 via Zoom platform. Dr. Mark, is a Professor of Medicine at West Virginia University (WVU), School of Medicine and an Air Force Reserve Lieutenant Colonel (ret). The lecture was the first talk on safe medication reduction in patients on therapeutic carbohydrate restriction.

Meet The Members Webinar Series

As a society comprising academics and researchers from the fields of pharmacology and physiology across the country, the MSPP would like to provide networking opportunities to its members – in particular the newer, younger members we have been excited to welcome over the last few years.

Given that our annual scientific conference as well as all talks and seminars which used to provide wonderful opportunities for this to happen now have to be held virtually, we are instead proposing to run a “Meet the Members” webinar series.

These webinars would have the following aims:

- To enable members of MSPP to get to know each other professionally.
- To provide a platform for members to share research interests and ongoing projects.
- To provide an opportunity to form meaningful research collaborations - in particular for the younger members.

Thank you so much to the 21 members who have taken the time to share your opinions. So far, our respondents are mainly from Pharmacology based disciplines (66.7%), and the main topics of interest indicated for the focus of these sessions are medical education (42%), endocrinology (33%) and cancer (29%). From the responses we did receive it seems there is significant interest in creating opportunities for networking among members and we got some great ideas for networking session formats we are looking into. Do you have different opinions from these or any good ideas you would like to share?

We would love to hear from more members and would greatly appreciate it if you would take a few minutes to fill up a short survey at the link below. Let us know what areas would be of interest to you and if you would be keen to present as well as attend. The link for the survey:

<https://forms.gle/y8qLEyARAqxKjBi99>

Your input would be very helpful to organize the sessions as meaningfully as possible.

Thank you!



By Dr. Priyia Pusparajah and AP Dr. Dharmani Murugan
Coordinators, Meet The Members initiative
priyia.pusparajah@monash.edu
dharmani79@um.edu.my

Upcoming Event: 35th MSPP Scientific Meeting 2022 (Second Announcement)

SECOND ANNOUNCEMENT

35th Annual Scientific Meeting for Malaysian Society of Pharmacology and Physiology

MSPP 2022

From Omics to Organism: Linking Basic Research to Healthcare Enhancement

26 - 28 July 2022
Virtual conference with **Airmeet**

Registration & Abstract submission link
bit.ly/MSPP2022register

Registration deadline 15 July 2022 **Abstract submission deadline** 30 April 2022

Registration fees	Early Bird (until 31 March 2022)		Normal rate (1 April 2022 - 15 July 2022)	
	Local participants	International participants	Local participants	International participants
MSPP members	MYR 100	USD 30	MYR 200	USD 70
Non- MSPP members	MYR 150	USD 50	MYR 250	USD 80
Students	Local - MYR 50 International - USD 20			

Find us at <https://bit.ly/MSPP2022>
Contact us at mspp@uitm.edu.my

Follow us @mspp2022 @35th.mspp.2022 @msiaPhyPhm

We are delighted to invite everyone to attend our upcoming 35th Annual Scientific Meeting of the Malaysian Society of Pharmacology and Physiology (MSPP 2022) which is scheduled on 26 -28 July 2022.

This event will be hosted virtually by Universiti Teknologi MARA (UiTM), with the theme "From Omics to Organism: Linking Basic Research to Healthcare Enhancement".

The conference will be conducted on the online platform Airmeet to give all participants an exciting virtual experience on top of ground breaking scientific programmes and networking opportunities.

Below are the important key dates for this event:

Registration & call for abstracts:

1 January 2022

Registration deadline:

15 July 2022

Abstract submission deadline:

30 April 2022

Register and submit your abstract now at:
<https://bit.ly/MSPP2022register>

For further enquiries, kindly contact:
MSPP 35th Scientific Meeting 2022 Secretariat
Faculty of Medicine, Universiti Teknologi MARA
Sungai Buloh Campus, Jalan Hospital,
40000 Sungai Buloh, Selangor, Malaysia
E-mail: mspp@uitm.edu.my

Search and follow the 35th MSPP Scientific Meeting social media platforms for updates:

<https://bit.ly/MSPP2022>

[35th.mspp.2022](https://www.facebook.com/35th.mspp.2022)

[mspp2022](https://www.instagram.com/mspp2022)

[msiaPhyPhm](https://twitter.com/msiaPhyPhm)

MSPP Member's Corner

Is Clinical Pharmacology an Endangered Medical Field in Malaysia?

When one first introduces themselves as a clinical pharmacologist, the common response is often "You are a pharmacist? Were you forced into doing this?" Views such as this in regards to clinical medicine and pharmacology, unfortunately, are rampant and can be said to be an international phenomenon. Such notions often result in the under-recognition of one discipline over the other. Is clinical pharmacology fading away in its gravity? Is there a lack of understanding about its value and hence the under-recognition? Shouldn't something be done to revive this situation especially if this discipline is related to the standard of healthcare?

Malaysia is currently approaching an efficient medical healthcare system due to its nationwide government and coetaneous private establishments. This is even attracting thousands of medical tourists annually. We have such an attractive healthcare system but what is lacking in this is the strengthening between clinical pharmacology and patient care. We should use the attraction that we have garnered for our healthcare to enhance the recognition and professional status of clinical pharmacologists. Providing an adequate knowledge base in this area is vital due to its imminent role in the holistic treatment of patients.

In theory, clinical pharmacology follows the infamous process of 'bench to bedside' thus, it unifies all the various fundamental disciplines of human pharmacology. It is guided by experimental and observational studies on the disposition and effects of drugs on the human body, which in turn translates to evidence-based therapeutics used in clinical settings. Pharmacodynamics, pharmacokinetics, rational prescribing, drug-drug interactions, and the dominating field of pharmacogenomics and policy making domains are but a few of the subspecialized areas of clinical pharmacology that are vital for a comprehensive healthcare system. Pharmacovigilance, another area that is categorized under clinical pharmacology, is essential for the monitoring of adverse reactions and drug safety.

It allows clinical pharmacologists to read between the lines and interpret reports of studies in a more wholesome manner which in turn has great potential when transferred to the clinical settings.

Malaysia is currently seeing an admirable increase in medical-related research and thus, more visibility. The quality of this output will be further enhanced with the inclusion of related knowledge from the various subspecialized areas of clinical pharmacology mentioned above. Clinical pharmacology is indispensable in creating awareness about the principles and ethics of Good Clinical Practices. It is a quintessential part of ethics committee, both in the academic and clinical settings, and is vital in the formulation of valuable guidelines in conducting clinical trials.

The acquisition, application, and dissemination of theoretical and clinical medicine in regards to drug and therapeutics should be in agreement with evidence-based practices. When clinicians and clinical pharmacologists collude in a synergistic manner, it results in more holistic approaches and practices, which will enhance the quality of the healthcare system. This can only happen if clinical pharmacology is given its due recognition.

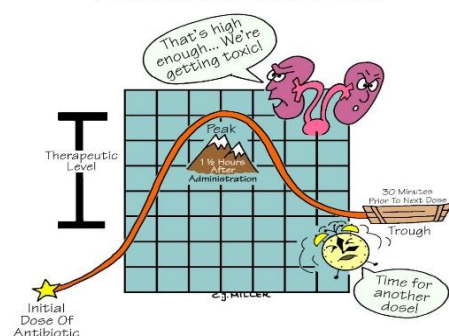
Let's collaborate in enhancing the value and visibility of clinical pharmacology and not drive it into extinction.

By Dr Praneetha Palasuberniam
MD, MSc (Clinical Pharmacology)
praneetha@ums.edu.my



- 1) Graduate student, Department of Pharmacology, Faculty of Medicine, University Malaya
- 2) Trainee lecturer (Pharmacology), Department of Biomedical Sciences, Faculty of Medicine & Health Sciences, University Malaysia Sabah.

PEAK AND TROUGH



MSPP Network Initiative

The MSPP Network Initiative is one of the society's efforts to encourage collaboration and networking among pharmacologists and physiologists in Malaysia particularly within MSPP members. If you missed the previous announcement and are still interested to participate, please scan the QR code to fill in your information details in our Google Form. Below we present to you the new members of the MSPP Network Initiative.

By Dr. Azlini Ismail
Coordinator, MSPP Network Initiative
dr_azlini@iium.edu.my



Pharmacology



- Dr. Chin Kok Yong
- chinkokyong@ppukm.ukm.edu.my
- Universiti Kebangsaan Malaysia
- WOS Researcher ID: B-6309-2015
- ORCID ID: 0000-0001-6628-1552
- Research area: Epidemiology of bone health and osteoporosis, Animal model of osteoporosis, osteoarthritis and metabolic syndrome, vitamin E, tocotrienol, natural products



- Dr. Nurul Alimah Abdul Nasir
- nurulalimah@uitm.edu.my
- Universiti Teknologi MARA
- WOS Researcher ID: I-7950-2019
- ORCID ID: 0000-0002-4285-7059
- Research area: Ocular pharmacology, Natural product, Metabolic disease, Gynaecology



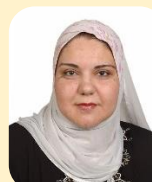
- Dr. Wu Yuan Seng
- sengwu_21@yahoo.com
- Sunway University
- WOS Researcher ID: S-9490-2019
- ORCID ID: 0000-0001-5574-8049
- Research area: Biochemistry, pharmacology, oncology, and therapeutics, primarily in the understanding of tumor biology and microenvironment



- Prof. Dr. Renu Agarwal
- renuag02@gmail.com
- International Medical University
- WOS Researcher ABA-7780-2020
- ORCID ID: 0000-0002-3050-7449
- Research area: Ocular Pharmacology and Therapeutics, Neuroscience, Animal models, drug development



- Assoc. Prof. Dr. Wan Amir Nizam Wan Ahmad
- wanamir@usm.my
- Universiti Sains Malaysia
- WOS Researcher ID: E-4539-2012
- ORCID ID: 0000-0002-0771-2559
- Research area: Animal model of diseases, natural product pharmacology, cardiovascular diseases, obesity and diabetes



- Assoc. Prof. Dr. Basma Ezzat Mustafa Alahmad
- drbasma@iium.edu.my
- International Islamic University Malaysia
- ORCID ID: 0000-0001-9953-4536
- Research area: Pharmacology, microbiology, natural herbal medicine and clinical laboratory sciences characterization, anticancer properties.

MSPP Network Initiative

Physiology



- Assoc. Prof. Dr Roslina Abdul Rahim
- roslinear@iium.edu.my
- International Islamic University Malaysia
- WOS Researcher ID: M-9107-2017
- ORCID ID: 0000-0002-9232-5157
- Research area: Animal model of non-alcoholic steatohepatitis, acute kidney injury & male infertility, tualang honey and habatus-saudah supplementation studies, ghrelin & leptin expression in PCOS patients.



- Dr Ratnadeep Saha
- ratnadeep.saha@newcastle.edu.my
- Newcastle University Medicine, Malaysia
- ORCID ID: 0000-0001-8345-5649
- Research area: Occupational health/Physiology, Medical Education (Case based learning curriculum and its implication on learning attitudes of medical students, teaching style and inventories)



- Assoc. Prof. Dr Kanakeswary Karisnan
- kana.krishnan@gmail.com
- Quest International University
- ORCID ID: 0000-0002-4341-9579
- Research area: Muscle physiology

MSPP New Life Members

Congratulations to all new Life Members of MSPP !!



Assoc. Prof. Dr. Anna Krasilnikova
krasilnikova_anna@uitm.edu.my
Universiti Teknologi MARA



Dr. Farrah Shafeera Ibrahim
drannshafeera@gmail.com
shafeera@uitm.edu.my
Universiti Teknologi MARA



Dr. Rosmaliza Ramli
rosmalizakk@usm.my
Universiti Sains Malaysia



Dr. Liza Noordin
lizackk@usm.my
Universiti Sains Malaysia

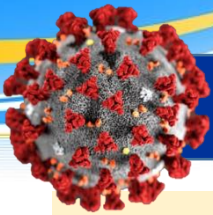
34th MSPP Abstract E-book PUBLISHED!

We are pleased to inform that the abstracts for "MSPP 34th Scientific Meeting 2021" have been published by Frontiers and can be accessed here: <https://tinyurl.com/34mspp-abstract>



COVID-19 News

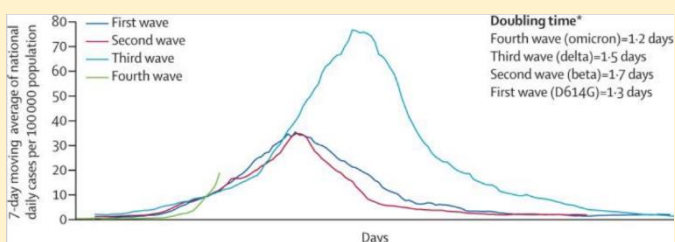
Omicron SARS-CoV-2 Variant: A New Chapter in the COVID-19 Pandemic



On Nov 25, 2021, about 23 months since the first reported case of COVID-19 and after a global estimated 260 million cases and 5.2 million deaths,¹ a new SARS-CoV-2 variant of concern (VoC), omicron, was reported. Omicron emerged in a COVID-19-weary world in which anger and frustration with the pandemic are rife amid widespread negative impacts on social, mental, and economic wellbeing. Although previous VoCs emerged in a world in which natural immunity from COVID-19 infections was common, this fifth VoC has emerged at a time when vaccine immunity is increasing in the world.

The emergence of the alpha, beta, and delta SARS-CoV-2 VoCs were associated with new waves of infections, sometimes across the entire world. For example, the increased transmissibility of the delta VoC was associated with, among others, a higher viral load, longer duration of infectiousness, and high rates of reinfection, because of its ability to escape from natural immunity, which resulted in the delta VoC rapidly becoming the globally dominant variant. The delta VoC continues to drive new waves of infection and remains the dominant VoC during the fourth wave in many countries. Concerns about lower vaccine efficacy because of new variants have changed our understanding of the COVID-19 endgame, disabusing the world of the notion that global vaccination is by itself adequate for controlling SARS-CoV-2 infection. Indeed, VoCs have highlighted the importance of vaccination in combination with existing public health prevention measures, such as masks, as a pathway to viral endemicity.

The earliest known case of omicron in South Africa (SA) was a patient diagnosed with COVID-19 on Nov 9, 2021, although it is probable that there were unidentified cases in several countries across the world before then. The mean number of 280 COVID-19 cases per day in SA, the week before the detection of omicron increased to 800 cases per day in the following week, partly attributed to increased surveillance. COVID-19 cases have since increased rapidly in the Gauteng province of SA; the early doubling time in the fourth wave is higher than that of the previous three waves.



Graph shows SARS-CoV-2 cases in the 1st, 2nd, 3rd, and 4th waves, Gauteng Province of South Africa.

*Doubling time for the first 3 days after the wave threshold of ten cases per 100,000 population. 7-day moving average cases per 100 000 population up to Dec 1, 2021.

The principal concerns about omicron include whether it is more infectious or severe than other VoCs and whether it can circumvent vaccine protection. Although immunological and clinical data are not yet available to provide definitive evidence, it can be extrapolated from what is known about the mutations of omicron to provide preliminary indications on transmissibility, severity, and immune escape. Omicron has some deletions and more than 30 mutations, several of which overlap with those in the alpha, beta, gamma, or delta VoCs. These deletions and mutations are known to lead to increased transmissibility, higher viral binding affinity, and higher antibody escape. Some of the other omicron mutations with known effects confer increased transmissibility and affect binding affinity. Importantly, the effects of most of the remaining omicron mutations are not known, resulting in a high level of uncertainty about how the full combination of deletions and mutations will affect viral behaviour and susceptibility to natural and vaccine-mediated immunity.

Although omicron is likely to be highly transmissible, it is not yet clear whether it has greater transmissibility than delta, although preliminary indications suggest that it is spreading rapidly against a backdrop of ongoing delta-variant transmission and high levels of natural immunity to the delta variant.

Extrapolations based on known mutations and preliminary observations, which should be interpreted with caution, indicate that omicron might spread faster and might escape antibodies more readily than previous variants, thereby increasing cases of reinfection and cases of mild breakthrough infections in people who are vaccinated. On the basis of data from previous VoCs, people who are vaccinated are likely to have a much lower risk of severe disease from omicron infection. A combination prevention approach of vaccination and public health measures is expected to remain an effective strategy. Thus far, most COVID-19 vaccines have remained effective in preventing severe COVID-19, hospitalisation, and death, for all previous variants. Importantly, existing public health prevention measures (mask wearing, physical distancing, avoidance of enclosed spaces, outdoor preference, and hand hygiene) that have remained effective against past variants should be continued, and be just as effective against the omicron variant.

Excerpt from:

Karim SSA, Karim QA. Omicron SARS-CoV-2 variant: a new chapter in the COVID-19 pandemic. *Lancet*. 2021 Dec 11; 398 (10317): 2126-2128. doi: 10.1016/S0140-6736(21)02758-6. Epub 2021 Dec 3. Erratum in: *Lancet*. 2022 Jan 8; 399 (10320): 142. PMID: 34871545; PMCID: PMC8640673.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8640673/>