

PHARMACYCONNECT

NEWSLETTER



September 2020

Volume 1, Issue 4

DEAN'S MESSAGE



Associate Professor Dr Mogana Sundari Rajagopal, Dean

The Fourth Industrial Revolution is changing the technological landscape of the healthcare industry and personal care sectors, where both pharmacists and formulation scientists will play a pivotal role. There is a great demand for innovative and dynamic pharmacists and formulation scientists in this field. Getting an ideal start has never been more important.

The Faculty is proud to announce the soon-to-be-launched, industry targeted undergraduate programme, Bachelor of Formulation Science (Honours) and a full research postgraduate programme, MSc (Pharmaceutical Sciences).

The Bachelor of Formulation Science (Honours) is the FIRST programme in Malaysia where graduates will be experts known as formulation scientists. They will create and develop novel formulations and delivery systems for new and existing products. These individuals will collaborate with other R&D professionals to explore and test proof of concepts and introduce novel formulation concepts into practice.

They will also lead in the development and commercialisation of advanced formulation technologies and products. The graduates will also be able to provide subject matter expertise in technology transfer, product registration, and process scale up for the above-mentioned concepts. These individuals will be skilled in the conception and development of formulations for the agricultural, pharmaceutical, nutraceutical, cosmeceuticals, herbaceuticals, personal care or related industries.

The Master of Science (Pharmaceutical Sciences) programme of FPS is the first Master's programme in Malaysia offering specialisation in the multidisciplinary areas of pharmaceutical sciences. Graduates of this programme will pursue advanced research leading to development of safe and effective medications. They will apply scientific concepts from multiple disciplines such as chemistry, physiology, pharmacology, microbiology, pharmacokinetics, pharmaceuticals, formulation science and clinical pharmacy. There is a huge demand for such professionals in the pharmaceutical industry, which is growing by leaps and bounds.

FPS ensures that world class teaching and research experience are provided to the students by an experienced team of professors and academicians who have strong ties with leading players of the pharmaceutical industry. Take the opportunity to be mentored by them and fulfil your potential in a dynamic and lively environment that encourages exploration and discovery.

Do stay tuned for the launching of these programmes and further details in our next newsletter!

Inside this issue:

- FPS Announces First PhD Graduate
- CCP@FPS
- Staff Achievement: Best Researcher Award
- Staff Spotlight: Lee Ming Tatt
- Staff Achievement: Webinars
- Establishment of PICE @ FPS
- New Undergraduate Degree Programme @ FPS
- Alumni Spotlight: Heah Chea Ming
- High Impact Publications @ FPS
- Student Achievement: Yau Xin Yi
- A Sneak Peek Into FPS
- Upcoming Events

Editorial Team:

- Assistant Professor Dr Anand Gaurav
- Assistant Professor Dr BVS Lokesh
- Osama Helweh



PHARMACYCONNECT newsletter is a bimonthly publication of the Faculty of Pharmaceutical Sciences (FPS), UCSI University, Kuala Lumpur.

FPS ANNOUNCES FIRST PhD GRADUATE



and targeted drug delivery. His expertise, as well as kindness and detailed guidance, played critical roles in the success of my doctoral research project,” he said.

“My fabulous supervisors inspired me to recover from setbacks and keep advancing my research. I am lucky that 2017 was the year FPS launched PhD programmes! I am grateful to have had this incredible honour!” he said.

Finally I will be always thankful to all who contributed to my PhD research in one way or another and I would like to extend my appreciation especially to Dr Cheah (Faculty of Medicine and Health Sciences, UCSI University), Dr Lionel (Faculty of Applied Sciences, UCSI University) and Dr Manogaran (FPS) for their support and insightful suggestions. Reach out and fulfil the mission ‘Hands to serve, Hearts to love” he said.

While telling about his decision to pursue his PhD, Dr Maki said that he was grateful that he decided to pursue the PhD: “However, although my PhD journey had many joys, it was also very challenging.”

FPS’s PhD (Pharmaceutical Sciences) programme has produced its first graduate, Dr Marwan Maki. The achievement is doubly noteworthy as it falls within four years of the launch of the programme in 2017.

Dr Maki’s doctoral thesis focused on the development of bioactive peptides encapsulated in nano-carriers for targeted drug delivery against cancer.

Dr Maki said that he was thrilled to be the first PhD graduate of FPS for his thesis: Preparation and Evaluation of Recombinant Growth Factor-Loaded Nanoparticles for Mucosal Delivery.

Furthermore, he said “My PhD research was about the preparation and evaluation of bioactive peptides encapsulated in nano-carriers for targeted drug delivery. In which, we have designed a new class of a potential anticancer complex to improve the efficacy of mTOR inhibitor; everolimus. The developed complex possesses greater cytotoxic activity than everolimus by inhibiting the growth, reproductive integrity and mobility of colorectal cancer cells.”

“I am grateful that I had the opportunity to work under the guidance of Dr Palanirajan Vijayaraj Kumar for my PhD degree at UCSI University. He is a leading scholar in Nanotechnology



CCP @ FPS

UCSI University
FACULTY OF PHARMACEUTICAL SCIENCES

COMPLEMENTARY COMPETENCY PROGRAMME

HOW SAFE ARE YOUR MEDICINES?

27 APRIL 2020
10.00AM - 11.30 AM

In-line with UN Sustainable Development Goals:

3 SUSTAINABLE DEVELOPMENT GOALS APPROVED

17 CEU CREDIT

Speaker:
POR CHOO SHIUAN
(Pharm. Honors, MScPharm)
Lecturer, Department of Clinical Pharmacy
Faculty of Pharmaceutical Sciences
UCSI University (K, Campus)

This talk aims to:

- Increase public awareness on the safeness and side effects of medicine
- Educate the public on ways to identify the authenticity of medicine

4 sub-topics to be covered by the talk:

- Drug discovery and development
- Side effects of medicine
- Counterfeit and adulterated medicine
- Your medicines, your right

Steps:

- 1 Register via Google Form (No registration fee)
- 2 Join the Microsoft Teams Channel (Link: <https://teams.microsoft.com/join/ucsi-pharm-fps>)
- 3 Attend the talk for the above date and time

SUSTAINABLE DEVELOPMENT GOALS
UCSI UNIVERSITY SUPPORTS SUSTAINABLE DEVELOPMENT GOALS

Complementary competency programme (CCP) titled “How safe are your medicines” was conducted on 27 April 2020 by Por Choo Shiuan, Lecturer from the Department of Clinical Pharmacy, FPS. A total of 256 participants registered, and 127 participants attended the CCP. The programme was designed with the objective to increase public awareness on the safety and side effects of medicine and educate the public on ways to identify the authenticity of medicine. From a survey conducted in 2013, almost 5% of medicines sold in Malaysia was fake. Serious concerns have been raised in the country on the emerging issue of fake medicine. In this CCP, Por shared several ways to identify the authenticity of the medicines. “In Malaysia, the Meditag Hologram and registration number on the packaging medicine can be used to check whether the medicine is fake,” said Por. In this era of technology, information of medicine can be obtained from the internet with a few clicks. However, misleading information available online may put the patient’s health at risk. Therefore, pharmacists play a vital role in disseminating correct information regarding the use of medicines.

STAFF ACHIEVEMENT: BEST RESEARCHER AWARD

Congratulations to Assistant Professor Dr Ashok Kumar Janakiraman from FPS, UCSI University for being nominated by the VDGGOOD committee members for the Best Researcher Award for the year 2020.

He was conferred with the award during the 7th International Scientist Awards on Engineering, Science and Medicine to recognise his contribution towards pharmaceutical research.

The virtual award ceremony was held on 4 – 5 July 2020 at Coimbatore, in India and was organised by the VDGGOOD Professional Association.

Dr Ashok has more than 12 years of research experience in pharmaceutical product development. His focus has been on solubility enhancement for poorly soluble drugs through various innovative formulation approaches.



DID YOU KNOW?

Pharmacy was separated from medicine as a distinct specialty way back in 1240 CE.

STAFF SPOTLIGHT: LEE MING TATT



Dr Lee Ming Tatt is an Assistant Professor in the Pharmaceutical Biology Department of FPS.

He completed his PhD in Physiology from University Putra Malaysia in 2013 and started his academic career at FPS, UCSI University also in 2013.

He has been associated with FPS ever since and has been actively involved in research and academic administration.

He served as the Head of Postgraduate and Research of FPS from 2015-2017, during which he founded and successfully launched the PhD (Pharmaceutical Sciences) and Master of Clinical Pharmacy Practice programmes.

Dr Lee has lately been concentrating on his research projects. During his postdoctoral fellowship at National Taiwan University from 2018 - 2020, Dr Lee published several high-impact papers on novel neuropharmacological and neurobiological signaling of chronic pain, addiction, and other preclinical models of neuropsychiatric disorders.

Dr Lee has recently rejoined FPS and will continue to contribute to the research output of FPS.

STAFF ACHIEVEMENT: WEBINARS



Kudos to Assistant Professor Dr Dharmendra Kumar for being invited to deliver a talk on the topic “Recent Advancement of Natural Product for Antineoplastic Agents.” in the Virtual Faculty Development Programme on “New Paradigm in Pharmaceutical Education and Research”, organised by Glocal University, India on 25 June 2020.

Dr Dharmendra was also invited to deliver a talk during PharmTech Web Series – 2020 organised by Chitkara C-

ollege of Pharmacy, Chitkara University, India on 19 June 2020. He spoke about the role of natural product in drug discovery and development.

Both the talks were well-received and much appreciated by the students and staff of the respective Universities and external participants as well.



ESTABLISHMENT OF PICE @ FPS

Continuing in the direction of promoting close engagement with industry, community and enhancing international academic and research collaborations, FPS has established the Department of Praxis, Industry, and Community Engagement (PICE) under the aegis of Centre of Excellence for Research, Value Innovation and Entrepreneurship (CERVIE), UCSI University. Praxis is the trademarked approach of UCSI towards an education that advocates the application of theory into practice. Above all, this approach seeks to connect students to today's world of end-to-end responsibility, not to insulate them from it. Thus, PICE at FPS aims promote and strengthen the praxis approach at the faculty level.

PICE functions as the faculty's referral center for industry and community engagements as well as establish strategies such as student/staff industry attachments, inviting leading experts to UCSI for knowledge sharing and cooperation.

PICE will intently coordinate, promote, and enhance the visibility of the university's engagement with the industry and the community sectors. PICE is looking forward to extending



the industry and community linkages as much as the academia. This would certainly increase the opportunities for students and staff of the faculty to acquire practical knowledge, understand the current state and needs of the industry and community.

This will also reduce the existing gap between the classrooms and the industry/community.

Additionally, this will also facilitate the convergence of new ideas.

Assistant Professor Dr Ashok Kumar Balaraman has been appointed as the Head of PICE, while Assistant Professor Dr Lee Ming Tatt, Melbha Starlin Chellathurai and Muhammad Ahsan Iftikhar Baig have been appointed as the faculty members of the PICE team.

NEW UNDERGRADUATE DEGREE PROGRAMME @ FPS

Did you know that FPS has recently obtained approval from MQA to launch a new undergraduate degree programme i.e. Bachelor of Formulation Science!

The salient features of the **Bachelor of Formulation Science (Honours)** programme are as follows:

- First formulation science degree programme in Malaysia
- Six weeks intensive PRAXIS training in top industries
- Translate creative ideas into innovative products
- Research opportunities at world top university

A promotional banner for the Bachelor of Formulation Science (Honours) programme at UCSI University. The banner features the UCSI University logo at the top left. The main text reads "BACHELOR OF FORMULATION SCIENCE" in large, bold, yellow letters. Below this, it says "Impact the World as a Formulation Scientist." in a smaller font. At the bottom left, there is a badge that says "WORLD UNIVERSITY RANKINGS TOP 400 2021" and "TOP 1.3% IN THE WORLD TOP 10 IN MALAYSIA". On the right side, there is a red banner that says "LAUNCHING SOON". The background of the banner shows a group of students in a laboratory setting, wearing white lab coats and safety goggles, working with test tubes and pipettes.

ALUMNI SPOTLIGHT: HEAH CHIA MING



Heah Chia Ming graduated from UCSI University in 2013 with a BPharm (Hons) degree. He pursued his pharmacy career as a regulatory pharmacist, currently serving as a Senior Assistant Director at the Malaysia National Pharmaceutical Regulatory Agency (NPRA).

A medical product must meet stringent requirements set by Malaysian laws and regulations before it can be marketed. As drug custodians of the country, pharmacists play a vital role in safeguarding the public from poor quality medications. With this goal in mind, Heah has set very high standard for himself in his career.

Heah's main task in NPRA includes ensuring the safety and quality of medications for public's use as well as making sure the products comply to established standards. Being in regulatory field, He realized that there are many substandard medicines in the world. Regulatory pharmacists are among the frontliners in ensuring public can access quality and effective medications. He takes pride in contributing to patients' safety by preventing poor quality medicines from entering the market.

FPS is proud to have Heah as its alumni and wishes that he continues to bring glory to the profession!

STUDENT ACHIEVEMENT: YAU XIN YI



Congratulations to Yau Xin Yi for publishing two research articles from her postgraduate research project. Another article of her is still under review and most likely to be published soon.

Xin Yi is a postgraduate student pursuing MSc in Pharmaceutical Chemistry at FPS, UCSI University. She is an alumna of BPharm (Hons) from the same university.

As part of her postgraduate research project, she has worked under the supervision of Assistant Professor Dr BVS Lokesh, on the development of sophisticated non-destructive analytical method for a series of antibiotics.

She has recently completed her provisional training for Provisionally Registered Pharmacist (PRP) at FPS, UCSI University along with her MSc.

Hereafter, she plans to pursue a career as an industrial Pharmacist. FPS wishes all the best to Xin Yi for a bright future and glorious career ahead.

DID YOU KNOW?

A banana has approximately 30% of your daily recommended intake of vitamin B6. Vitamin B6 helps the brain produce serotonin, which is considered a mood stabiliser.

HIGH IMPACT PUBLICATIONS @ FPS

JPHSR Journal of Pharmaceutical Health Services Research

2020, Vol. 14, No. 1
 Received April 24, 2020
 Accepted July 14, 2020
 DOI: 10.1177/102838652001400101

Short Communication

Barriers and facilitators to provision of written consumer medicines information among community pharmacists in Malaysia: a cross-sectional study

Omotayo Fatunmi¹, Xin Yi Mooi², Osama Helwel³ & Mogana Rajagopal⁴

¹Department of Clinical Pharmacy, Faculty of Pharmaceutical Sciences, UCSI University, Kuala Lumpur and ²Department of Pharmaceutical Biology, Faculty of Pharmaceutical Sciences, UCSI University, Kuala Lumpur, Malaysia

Abstract

Objectives This study examined the barriers and facilitators to the provision of consumer medicine information leaflets (CMI) by community pharmacists in Malaysia and assessed the relationship between the participants' characteristics and provision of CMI.

Methods This was a cross-sectional self-administered questionnaire survey conducted among pharmacists working in randomly selected community pharmacies in the Federal Territories of Kuala Lumpur and Putrajaya, and the State of Selangor, Malaysia. Multiple response analysis was conducted to examine the barriers and facilitators. Chi-square test was used to assess the relationship between the participants' characteristics and provision of CMI. IBM SPSS Statistics version 23 software was used for all statistical analysis. Statistical significance was set at $P < 0.05$.

Key findings A total of 162 participants were involved in the study. Response rate was 77.5% (152 out of 200) and completion rate 80%. The two most frequently reported barriers to non-provision of CMI were because the customer has taken the medicine previously (26.4%) and the customer receives all the information they need verbally (20.9%). The two most frequently reported facilitators to the provision of CMI were because the community pharmacist felt they have a duty of care to inform the customer about their medicine (16.7%) and the customer has a right to information about their medicine (15.6%). There was a significant association between the provision of CMI and participants' educational level ($P = 0.005$) and awareness of CMI ($P < 0.001$).

Conclusions The key barriers to the provision of CMI by the community pharmacists appeared to be related to individual factors, while key facilitators appeared to be related to the professional obligations of the community pharmacists. Increased awareness and educational strategies would be important in improving the provision of CMI by community pharmacists in Malaysia.

Keywords barriers; facilitators; community pharmacist; consumer; Malaysia; written medicines information

Introduction

Consumer access to appropriate written medicines information is important to ensuring safe and effective use.^{1,2} In 2011, Malaysia introduced standardized written medicines information, known as 'consumer medicines information leaflet' (CMI) in order to enhance consumers' knowledge about their medicines.³ Community pharmacists are well positioned to increase access to written medicines information (WMI) during prescription dispensing. However, studies⁴⁻⁶ suggest that the provision of WMI to consumers in Malaysia is limited. This study examined the barriers and facilitators to the provision of CMI by community pharmacists in Malaysia and assessed the relationship between the participants' characteristics and provision of CMI.

Methods

Correspondence: Omotayo Fatunmi, Department of Clinical Pharmacy, Faculty of Pharmaceutical Sciences, UCSI University, Jalan Menara Gading.

Open Access Article

Check for updates

© The Author(s) 2020. Reprints and permissions: sagepub.com/journalsPermissions.nav

DOI: 10.1177/102838652001400101

Journal homepage: www.jphsr.com

Research article

Docking based screening and molecular dynamics simulations to identify potential selective PDE4B inhibitor

Maynash Al-Nemr¹, Anand Ganar², Vannajin Sanghin Lee³

¹School of Pharmaceutical Sciences, UCSI University, Kuala Lumpur, Malaysia; ²Department of Chemistry, Faculty of Science, University of Malaya, Kuala Lumpur, Malaysia

ARTICLE INFO

Keywords

Phosphodiesterase 4
 Inhibitor
 Molecular dynamics simulation
 Docking based screening
 Pharmacokinetic data
 Pharmacological activity

ABSTRACT

Inhibition of phosphodiesterase (PDE) is a promising therapeutic approach for the treatment of inflammatory pulmonary diseases, in asthma and chronic obstructive pulmonary disease. However, the treatment with non-selective PDE inhibitors is associated with side effects such as nausea and vomiting. Among the subtypes of PDE inhibited by these inhibitors, PDE4B is expressed in bronchi, inflammatory and smooth muscle cells, whereas, PDE4D is expressed in the airway epithelium and smooth muscle cells. PDE4B inhibition is responsible for the smooth muscle relaxation. In this regard, a selective PDE4B inhibitor is expected to be a potential drug candidate for the treatment of inflammatory pulmonary diseases. Therefore, a closed basket pharmacophore model was developed and used as a query for the virtual screening of the library of 100000 compounds. A number of hits were applied to ensure only compounds with drug-like properties were selected. Accordingly, six compounds were identified as lead hits, where HTD0020 showed the highest affinity towards PDE4B. The docking analysis of HTD0020 with PDE4B and PDE4D were subjected to molecular dynamics simulation for 100 ns to assess their binding stability. The results showed that HTD0020 was bound tightly to PDE4B and formed a stable complex with it than with PDE4D.

1. Introduction

Cyclic nucleotide phosphodiesterases (PDEs) are a diverse family of enzymes involved in the hydrolysis of 3',5'-cyclic adenosine monophosphate (cAMP) and 3',5'-cyclic guanosine monophosphate (cGMP) to their inactive 5'-AMP and 5'-GMP forms, respectively (Guan and Tsai, 2015). In mammals, 21 genes encoding 13 families of PDEs, namely PDE1-PDE13 (Guan et al., 2007; O'Connell and Zhang, 2004). The PDE family is the largest of the 12 PDE families that selectively hydrolyse cAMP and includes four subtypes: PDE4A, PDE4B, PDE4C and PDE4D (Guan et al., 2007; Guan et al., 2005; Santos et al., 2008). All four PDE4 subtypes comprise a related structural organization with a highly conserved catalytic domain in the C-terminal region and cytosolic extended regions (UCR1) - C50 amino acids and UCR2 - 78 amino acids in the N-terminal which further classify the PDE4 subtypes into four classes: long, short, super short and dual short (Guan et al., 2005; Guan et al., 2007; Santos, 2016). The absence of UCR1 residues the short form of PDE4 subtypes (Guan et al., 2005; Yan, 2013; Santos, 2016). The UCR1 is a target of protein kinase A phosphorylation that increases the hydrolysis of cAMP by 2-4 fold over the basal level.

Whereas, the UCR2 opening and closing regulates the access of cAMP to the active site. The small inhibitor which binds to the active site of PDE4 and interact with specific residues in the UCR2 site show the UCR2 and inhibit the enzyme (Guan et al., 2005). PDE4 subtypes express in immune and inflammatory cells at different levels where PDE4B being the most abundant in immune, inflammatory and smooth muscle cells (Guan et al., 2005). PDE4A is expressed at low levels in inflammatory cells while PDE4C is absent. On the other hand, the PDE4D express in the airway epithelium and smooth muscle cells (Guan et al., 2005; Paro-Torres et al., 2008).

The production of pro-inflammatory cytokines and inflammatory cytokines is regulated via degradation of cAMP by PDEs. The inhibition of PDE4 results in the elevation of cAMP level and activation of PKA and exchange protein directly activated by cAMP (EPAC) (Ueda). The activation of PKA leads to the phosphorylation of cAMP responsive element binding protein (CREB) and activation of the transcription factor (ATF-1) which results in increasing the production of anti-inflammatory cytokines and decrease the inflammatory cytokines (Li et al., 2018). Roflumilast, a PDE4 inhibitor, was approved by the FDA for the treatment of asthma and chronic obstructive pulmonary disease (COPD). Roflumilast showed

* Corresponding author.
 Email address: omoi@pharmsci.ucsi.edu.my (M. Ganar).

A SNEAK PEEK INTO FPS

FPS is soon going to launch a new **Master of Science (MSc) (Pharmaceutical Sciences)** programme. The salient features of this programme are as follows:

- Full research mode postgraduate programme
- Research in multidisciplinary area in pharmaceutical sciences
- Pursue your postgraduate studies while working
- Research attachment in world top universities and industries
- Conversion to the Doctor of Philosophy (Pharmaceutical Sciences) after one (1) year of study in the programme.



FPS offers both undergraduate and postgraduate programmes with the emphasis on serving the community.

Doctoral Programme

- Doctor of Philosophy (Pharmaceutical Sciences)

Masters Programmes

- MSc Pharmaceutical Chemistry
- MSc Pharmaceutical Technology
- Master of Clinical Pharmacy Practice
- MSc (Pharmaceutical Sciences)*

Degree Programmes

- Bachelor of Pharmacy (Hons)
- Bachelor of Formulation Science (Hons)*

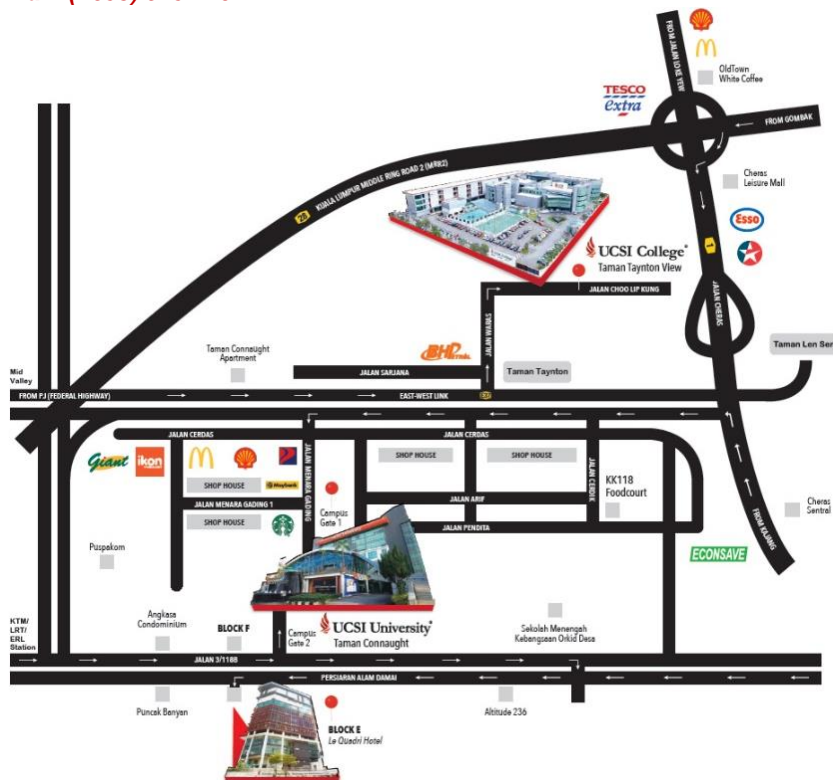
Foundation Programme

- Foundation in Science (Pharmacy)

*Launching soon

We are located at:

***Level 10, Block G, UCSI University Kuala Lumpur Campus
No. 1, Jalan Menara Gading,
UCSI Heights (Taman Connaught), Cheras
56000 Kuala Lumpur, Malaysia
Phone: (+603) 9101 8880
Fax: (+603) 9102 2614***



Contributors:

- Assistant Professor Dr Ashok Kumar Janairaman
- Assistant Professor Dr Lee Ming Tatt
- Assistant Professor Dr Ashok Kumar Balaraman
- Dr Marwan Maki
- Yap Chuan Sheng
- Por Choo Shuan
- Assistant Professor Dr Dharmendra Kumar
- Dr Muhammad Junaid Farrukh

UPCOMING EVENTS @ FPS

- Interview of Dr Mogana Sundari Rajagopal on Astro News Channel 231 (Tamil) on 23 September 2020 at 8.30pm.
- Complementary Competency Programme on "ATIR and FTIR Spectroscopy for Science and Engineering Students" by Dr Shaik Ibrahim Khalivulla and Dr Gabriel Akyirem Akowuah on 13 October 2020.
- Know Your Medicine Talk Series titled "Pharmacovigilance: Bridging Safety Data to Clinical Practice" by Ng Yi Lin (Drug Safety Lead, Roche Malaysia)
- The MPS-UCSI Pre-convention Refresher Course on "Compounding of Cream, Gel, Capsule and Syrup" on 20 October 2020.
- Complementary Competency Programme on "Immunomodulators and Their Effects on Immunity" by Dr Dharmendra Kumar on 23 October 2020.

