Detection of herpes simplex virus-1 by direct immunofluorescence and viral isolation from cerebrospinal fluid

Ummu Salamah Faisal, Ummu Afeera Zainulabid, Wong Kong Ken

Outline

Introduction

Herpes simplex virus (HSV) is the human herpesvirus that leads to herpes simplex encephalitis or meningoencephalitis and is frequently lethal if not treated properly.

CASE PRESENTATION

• A single 21-year-old previously healthy man presented to the Emergency Department (ED) UKMMC with sudden onset of aphasic and abnormal behavior for one day.

• Associated with: low-grade fever for 1 week, vomiting about 3 episodes per day, and frontal headache that radiates to the bilateral temporal region.

• He visited a General Practitioner after day 1 of the fever, who treated him for bacterial infection and discharged him with an oral antibiotic.

PHYSICAL EXAMINATION

Upon arrival his
- GCS was E3V2M5
- Temperature of 39°C (febrile),
- BP was 128/61 mmHg, pulse rate of 75 bpm.
- During the neurological examination he could not obey orders and unable to answer questions or form sentences.
- Upper limb examination bilaterally showed motor power of 3/5 and lower limbs bilaterally shows 5/5, with both upper and lower limb revealed normal muscular tone and normal tendon reflexes. The rest of the clinical examinations were normal.

Methods

A lumbar puncture was performed immediately during admission to the ward. Cerebrospinal fluid was also sent for viral culture.

The culture was inoculated into human cells in culture (HEp-2) cell   and observed for cytopathogenic effect (CPE).

 Then the slide was prepared for direct immunofluorescence staining using fluorescein isothiocynate-conjugated HSV type 1 and HSV type 2 antisera. Positive findings would demonstrate cells with fluorescent staining, whereas negative specimens would demonstrate cells with a reddish-brown counterstain.

Results & Discussion

Laboratory Investigation

-Urine toxicology : negative

-Blood culture: No growth after 5 days

-Serological test for HBV, antiHCV and HIV are all Non Reactive.

-RPR Non Reactive.

-CSF for TB PCR : DNA not detected

-CSF for bacterial culture : No growth after 48 hours
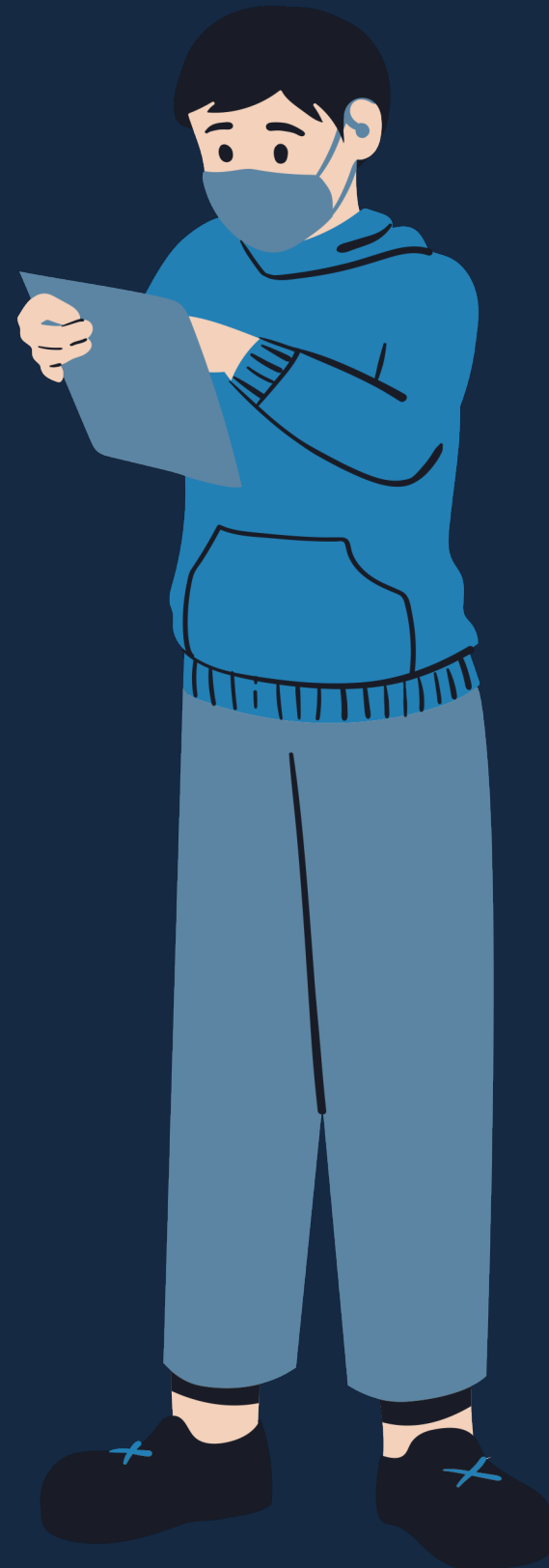
Radiological Investigation

- Chest X-ray : normal

- Brain CT scan : hypodensity on the left paramidline high frontal intracranial/ cortical calcification

- Brain MRI : focal area of gyral thickening at left frontoparietal lobes with leptomeningeal enhancement at left Sylvian fissure, suggestive of meningoencephalitis
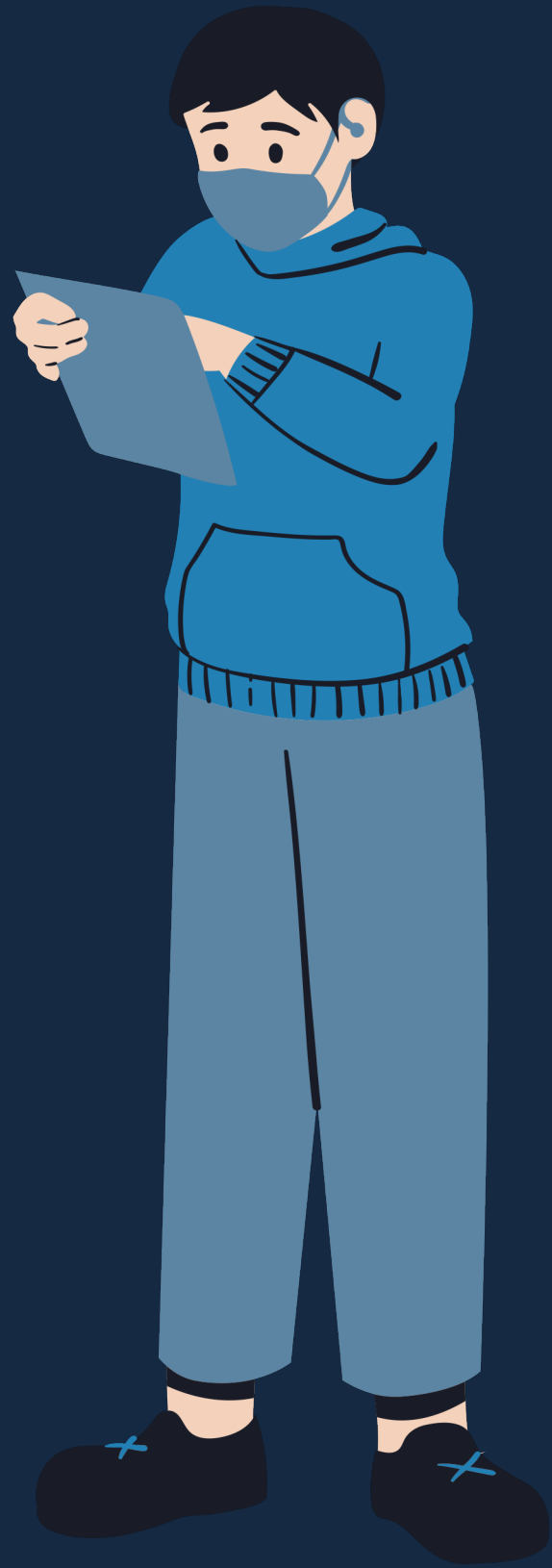
CSF Results

- **0 polymorphs cells/mm3 ,**
- **0 lymphocytes count,**
- **0 pus cell**
- **CSF biochemistry showed glucose of 1.67mg/dl and a very high total protein of 1596 mg/dl**

- **POSITIVE FOR HSV VIRAL CULTURE**

Detection of Herpes Simplex 1 Virus

• The CSF sample was cultured in Hep 2 cell line
• Cytopathogenic effect (CPE) was observed daily while the cell was cultured for 10 days
• After day 10 of cell culture, CPE was positive
• The Kit and Reagent used for this IF staining is Light Diagnostic HSV 1 and 2 DFA Typing Kit.

Then the slide was prepared for direct immunofluorescence staining using fluorescein isothiocynate-conjugated HSV type 1 and HSV type 2 antisera.

Positive findings would demonstrate cells with fluorescent staining, whereas negative specimens would demonstrate cells with a reddish-brown counterstain.
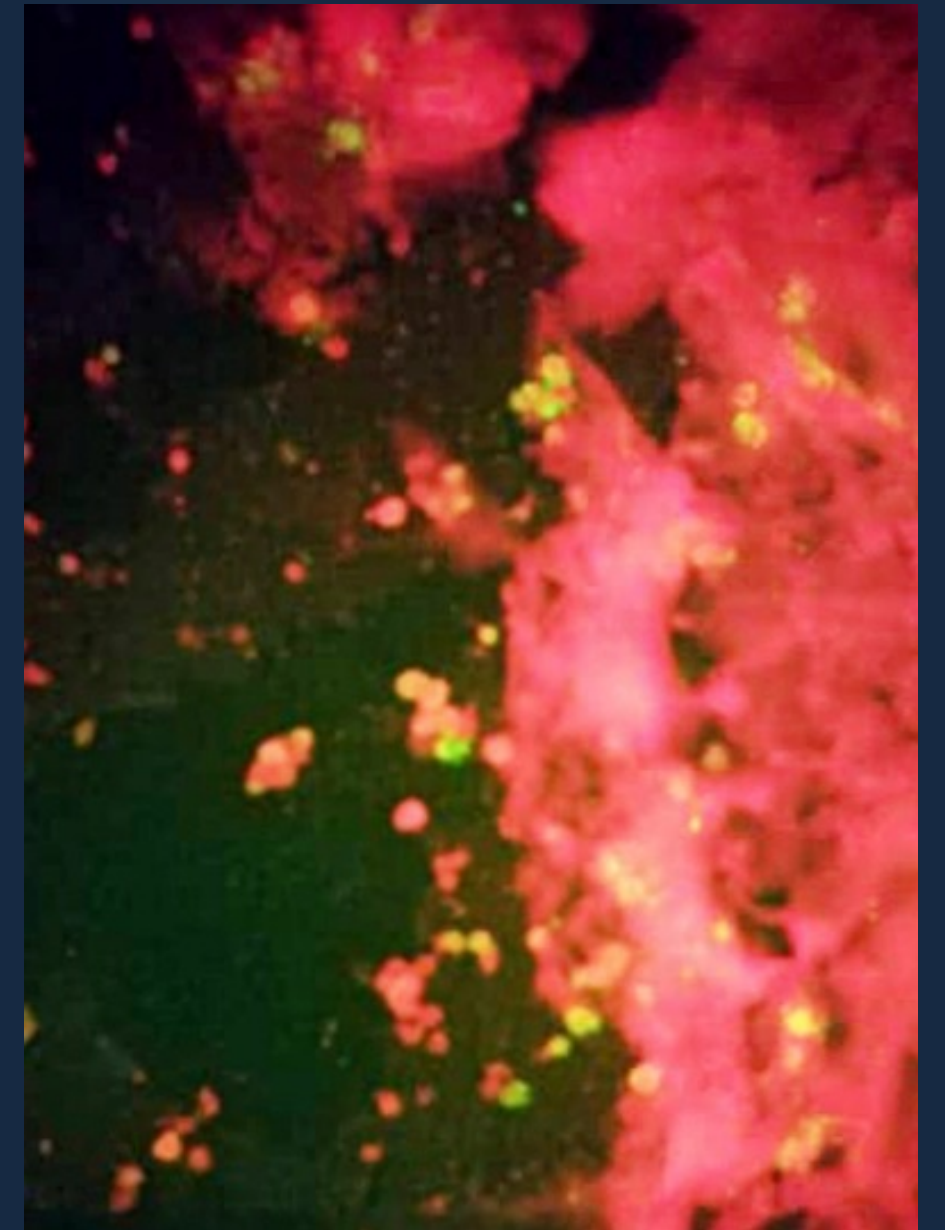
Discussion

- In this case, the prepared slide that was observed under the ultraviolet microscope has revealed a positive finding for HSV-1 and negative finding for HSV-2.

- HSV-1 has accounted for more than 90% of all herpes simplex encephalitis cases in adults and children.

- In recent years, the HSVE diagnosis is usually made by using PCR to detect viral DNA in cerebrospinal fluid (CSF) (Fodor et al, 1998). This method of detecting DNA in CSF is highly sensitive (98%) and specific (94%–100%).

- Viral culture isolation from adult's CSF sample is uncommon, thus it is usually indicated in newborns since HSV can be retrieved from the CSF sample up to 50% (Whitley RJ, 1990). So, before HSV PCR has been widely used in the current clinical laboratory, antigen detection from CSF sample is necessary for HSVE diagnosis
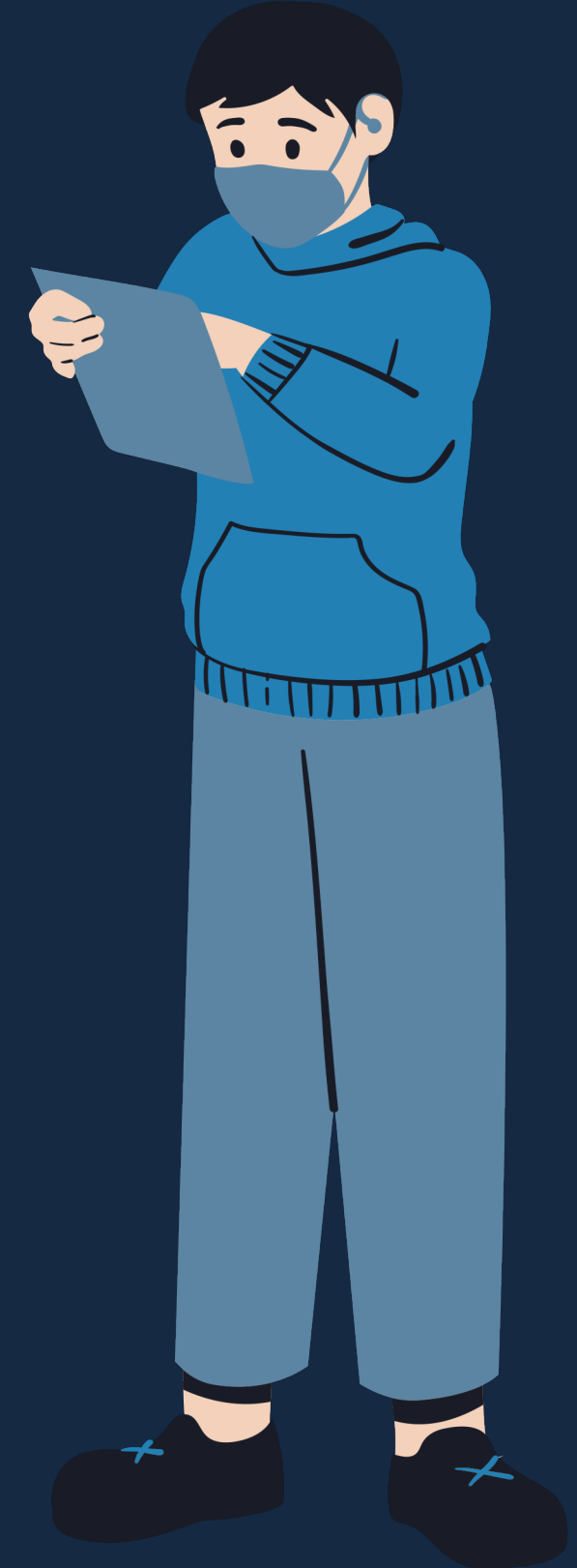
Conclusion

• This case proves that immunofluorescence antigen detection is an accurate and sensitive method for distinguishing HSV-1 and HSV-2 antigen in the cerebrospinal fluid of those infected individuals.

Thank you!

Get in touch!

CO-ORGANIZED BY

KEMENTERIAN PENGAJIAN TINGGI

GOLDEN SPONSORS

SILVER SPONSORS

TABLE OF CONTENT

MDBD 2022 Organizing Committee

Advisor   **Aziah Ismail**

Chairperson   **Tye Gee Jun**

Co-Chairperson   **Gurjeet Kaur**

Secretary   **Anizah Rahumatullah**

                                                Daruliza Kernain Mohd Azman

Secretariat   **Nurulhasanah Othman**
                                                Eugene Ong Boon Beng
                                                Nor Dyana Zakaria
                                                Izzati Zahidah Abdul Karim
                                                Azimah Ahmad

Treasurer   **Mohamad Khusaini Jamaluddin**
                                                Azlina Omar
                                                Rodziyah Saari

Scientific Committee   **Noor Fatmawati Mokhtar**
                                                Ong Ming Thong
                                                Sylvia Annabel Dass
                                                Nurul Huda Syed Ibrahim
                                                Janany a/p Manimaran
                                                Deeza Syafiqah Mohd Sidek
                                                Gaayathri a/p Kumarasamy
                                                Kasturi a/p Selvam

Sponsorship Committee   **Leow Chiuan Herng**
                                                Venugopal Balakrishnan
                                                Khairul Mohd Fadzli Mustaffa

Publicity and Website Committee   **Chew Ai Lan**
                                                Fatin Hamimi Hamat@Mustafa
                                                Nik Nur Jalilah bt. Nik Mohd Hanaffi
                                                Wong Ru Shen
                                                Muhammad Danial Hakim
                                                Sharminy A/P Pirem Sunder
                                                Paveethra Shuraish
                                                Nurul Nadia binti Mohamad Alias
                                                Ong Ching Yi

Technical Committee

Lai Ngit Shin
Khoo Boon Yin
Sasidharan Sreenivasan
Ahmad Anas Hamka Ayob
Mohd Nasir Yusuf
Mohamad Fadhzli Abdul Wahab
Zalani Mamat
Nurul Huda Mohd Baharuddin
Zafri Muhammad
Siti Sarah Md Yatim
En. Asrul Aziz bin matwi
Noor Aini bt Ashaari
Gan Shin Yi
Norshidah Harun
Pung Hai Shin

Welcoming remarks from Conference Advisor

Associate Prof. Dr. Aziah Ismail

Greetings and a warm welcome to the 6th International Conference on Molecular Diagnostics & Biomarker Discovery (MDBD 2022). Academics, medical and industry professionals, postdoctorates, post-graduates, researchers, scientists, and all other relevant individuals are welcome to attend this virtual conference. The theme of this conference, "Building Resilience in Biomedical Research," is co-organized with the Ministry of Higher Education (MOHE), Malaysia. The COVID19 pandemic has taught us a valuable lesson in emphasising the importance of knowledge and research in addressing a global health challenge. Building resilience in biomedical research is critical for addressing current health issues as well as planning for the future. We can identify pathogens, their transmission routes, and novel treatment and prevention strategies by generating and sharing knowledge.

In keeping with the theme, this conference will cover a wide range of topics including molecular diagnostics, infectious diseases, biomarker discovery, therapeutics, nanotechnology, clinical and companion diagnostics, genomics, proteomics, genetics, oncology, and tumour microenvironment. This conference is also intended to demonstrate the university's commitment to science and technology, as well as the spirit of knowledge-sharing. We hope you enjoy our comprehensive programme, which includes world-leading plenary speakers, early career researchers, academic, medical, and industrial experts, as well as oral and poster presentations. Please take advantage of this opportunity to boost knowledge sharing and networking among local and international delegates.

The conference programme is the result of many people's efforts. I would like to thank the Organizing Committee for their months of hard work, dedication, and commitment. We are also thankful to all of our sponsors for their kind support and contributions. Finally, I would like to thank all of the delegates who came to share their research. Please enjoy the conference.

Aziah Ismail

Message from MDBD Conference Chairperson

Dr. Tye Gee Jun

On behalf of the Organizing Committee of the 6th International Conference on Molecular Diagnostics & Biomarker Discovery (MDBD 2022), I would like to extend my heartiest and warmest welcome to all delegates from local and international universities, speakers and sponsors. My deepest appreciation to our distinguished speakers for kindly accepting our invitation; we are indeed honoured and fortunate to have outstanding international and local experts' present among us. We would also like to extend our deepest appreciation to Kementerian Pendidikan Tinggi Malaysia (KPT) under the HICoE programme for INFORMM who have been supportive of the MDBD conference series as our co-organizer. This conference is carried out to share advances in the biomedical field with emphasis in biomarker discovery, infectious diseases, nanotechnology, diagnostics, therapeutics, and many other health related fields especially research resilience after the COVID-19 pandemic. It is very challenging to pursue research in the current pandemic era, but it is an opportunity for research systems to improve and advocate the importance of their existence by being accountable in this crisis. Multidisciplinary collaboration is needed to ensure continuous biomedical research that offers solutions and development of effective interventions to achieve a better and more sustainable future for the entire humanity. Thus, the theme of the 6th MDBD conference is "Building Resilience in Biomedical Research".

This conference is structured to put together a multitude of keynote talks, symposia sessions, oral and poster communication sessions in both diagnostics and therapeutics. We hope that this three-day virtual conference will be a great platform for participants to connect with colleagues, share and exchange knowledge, generate new ideas and establish collaboration.

Finally, I'd like to extend my gratitude to the wonderful and extremely hardworking team of committee members that ensured that this conference would be a great experience for all of us. We hope everyone would have a great time here and gain as much as possible from it!

With best wishes,

PROGRAMME

		DAY 1
		11 OCTOBER 2022
0845 – 0900		**OPENING CEREMONY** *Associate Professor Dr Aziah Ismail, Director of INFORMM, Advisor of 6th MDBD Organizing Committee*
0900 – 0945		**CHAIRPERSON** *Associate Professor Dr Aziah Ismail* **KEYNOTE ADDRESS** **Emerita Professor Datuk Dr Asma Ismail** *FASc* *President of Academy of Sciences Malaysia*
0945 – 1030	**Room Link (Main Hall)**	**CHAIRPERSON** *Dr Fatin Hamimi Hamat@Mustafa* **PLENARY 1** **Professor Dr Mohd Adzir Bin Mahdi** *Lab-on-fiber Biophotonic Sensors*
1030 - 1045		**BREAK**
1045 - 1115		**CHAIRPERSON** *Dr Leow Chiuan Herng* **Technical Talk 1** **Dr Marshall Feterl (Genomax)** *Nanostring's Complete Spatial Solution*

	SYMPOSIUM 1A Diagnostic Platform	SYMPOSIUM 1B Therapeutic Platform
1115 - 1300	**Room Link (Hall 1)**	**Room Link (Hall 2)**
	CHAIRPERSON *Prof Dr Gurjeet Kaur*	**CHAIRPERSON** *Assoc Prof Dr Sasidaran Sreenivasan*
	Professor Peter Hoffmann *Statistical methods and machine learning in the diagnosis of endometrial cancer*	**Dr Azhar Rasul** *Malic Enzyme 2 (ME2): Novel and selective target for cancer therapy*
	Dr Arutha Kulasinghe *Spatial genomics in the era of immunotherapy and COVID-19*	**Dr Rangsima Reantragoon** *Osteoarthritis in the immunological context*
	Mr Tang Kok Mun *Aptamers – Digitalizing Biotechnology for Global Diagnostics*	**Professor Ian Charles Paterson** *Sphingosine 1-phosphate signaling in cancer*
	Q&A	Q&A
1300 – 1400	**BREAK** [e-POSTER DISPLAY & Q/A]	

1400 – 1445	Room Link (Main Hall)	**CHAIRPERSON** *Dr Noor Fatmawati Mokhtar* **PLENARY 2** **Professor Dr Cheong Sok Ching** *Cancer therapeutics: Drug repurpose*
1445 - 1515		**CHAIRPERSON** *Dr Khairul Mohd Fadzli Mustafa* **Technical Talk 2** **Dr Hui Foon Tan (Next Gene – Genscript)** *Vaccine development for emerging infectious diseases*

1515 – 1715	**ORAL PRESENTATION 1A** Room Link (Hall 3)	**ORAL PRESENTATION 1B** Room Link (Hall 4)	**ORAL PRESENTATION 1C** Room Link (Hall 5)	**ORAL PRESENTATION 1D** Room Link (Hall 6)
	CHAIRPERSON *Dr Daruliza Kernain*	**CHAIRPERSON** *Dr Anizah Rahumatullah*	**CHAIRPERSON** *Associate Prof Dr Khoo Boon Yin*	**CHAIRPERSON** *Dr Sylvia Annabel Dass*
	O-1	O-9	O-17	O-25
	O-2	O-10	O-18	O-26
	O-3	O-11	O-19	O-27
	O-4	O-12	O-20	O-28
	O-5	O-13	O-21	O-29
	O-6	O-14	O-22	O-30
	O-7	O-15	O-23	O-31
	O-8	O-16	O-24	O-32
	End of Day 1			

DAY 2
12 OCTOBER 2022

0845 – 0930	**Room Link (Main Hall)**	**CHAIRPERSON** *Dr Ong Ming Thong* **PLENARY 3** **Emeritus Professor Satvinder Singh Dhaliwal** *Logistic regression and predictive models in biomedical research, and its validity*
0930 – 1000		**CHAIRPERSON** *Dr Leow Chiuan Herng* **Technical Talk 3** **Dr Lee Wei Kang (Codon Genomics)** *Digital Solutions and Platforms for Biomedical Research*
1000 – 1015	**BREAK**	

1015 – 1215	**ORAL PRESENTATION 2A** **Room Link (Hall 7)**	**ORAL PRESENTATION 2B** **Room Link (Hall 8)**	**ORAL PRESENTATION 2C** **Room Link (Hall 9)**
	CHAIRPERSON *Dr Nurulhasanah Othman*	**CHAIRPERSON** *Associate Prof Dr Choong Yee Siew*	**CHAIRPERSON** *Dr Daruliza Kernain*
	O-33	O-41	O-49
	O-34	O-42	O-50
	O-35	O-43	O-51
	O-36	O-44	O-52
	O-37	O-45	O-53
	O-38	O-46	O-54
	O-39	O-47	O-55
	O-40	O-48	O-56

1215 - 1245	**Room Link (Main Hall)**	**CHAIRPERSON** *Dr Khairul Mohd Fadzli Mustafa* **Technical Talk 4** **Ms Yolanda (3S Scientific)** *CytoFLEX SRT: The CytoFLEX That Sorts*
1245 – 1345		**BREAK** **[e-POSTER DISPLAY & Q/A]**
1345 - 1415		**CHAIRPERSON** *Dr Khairul Mohd Fadzli Mustafa* **Technical Talk 5** **Dr Tam Yew Joon (Biogenes)** *Rapid Synthesis of Oligonucleotides using Benchtop Synthesizer*
1415 – 1700	**SYMPOSIUM 2A** **Diagnostic Platform:** **Room Link (Hall 10)**	**Symposium 2B** **Therapeutic Platform** **Room Link (Hall 11)**

CHAIRPERSON *Dr Tye Gee Jun*	CHAIRPERSON *Dr Eugene Ong Boon Beng*
Professor Dr Mehmet Özsöz *CRISPR powered electrochemical biosensors*	**Associate Professor Dr Pongrama Ramasoota** *Therapeutic Antibody against E and Ns1 proteins of dengue virus*
Dr Klaus Hochleitner *Selection of lateral flow test reagents using surface plasmon resonance*	**Dr Lai Hung Wei** *Role of transporters in cancer phototheragnostics*
Dr Shimaa Hassan Eisaa *Aptamers in diagnostic electrochemical biosensors*	**Dr Mina Aminlou** *How ATMP helps the incurable diseases?*
Q&A	Q&A
End of Day 2	

DAY 3 13 OCTOBER 2022		

0845 –
1100
	Room Link
	(Main Hall)
		FORUM
		Building Resilience in Biomedical Research
		
		Moderator **Dr Tye Gee Jun**
		    INFORMM, Universiti Sains Malaysia
		    MALAYSIA
		
		Panel 1. **Professor Dr Norazmi Mohd Noor**
		    Universiti Sains Malaysia MALAYSIA
		    2. **Professor Ir. Dr Fatimah Binti Ibrahim**
		    Universiti Malaya, MALAYSIA
		    3. **Mr Ivan Hoh**
		    Founder & Chief Executive Officer, Codon Genomics, MALAYSIA
		    4. **Dr Low Ley Hian**
		    Director of Clinical and Science Operations, InterVenn Biosciences, MALAYSIA

1100 - 1130	Room Link (Main Hall)	**CHAIRPERSON** *Dr Leow Chiuan Herng* **Technical Talk 6** **Ms Lydiana Ng (Neoscience)** *Digital PCR: Next Generation Solution for Molecular Diagnostic*
1130 – 1200		**CHAIRPERSON** *Prof Dr Gurjeet Kaur* **ANNOUNCEMENT OF THE WINNERS** *Best poster and oral presenters, winner, and runner-up*
		CLOSING CEREMONY *Dr Tye Gee Jun Chair of the 6th MDBD Organizing Committee*
	End of Conference	

SPEAKERS

Keynote Speaker's Profile

Professor Emerita Datuk Dr. Asma Ismail, FASc
President, Academy of Sciences
MALAYSIA
asmainformm@yahoo.com

Summary

Prof. Emerita Datuk Dr. Asma binti Ismail is the President of Academy of Sciences Malaysia, the Ibnu Sina Chair for Medicine at IIUM and has been appointed as the National Science, Technology and Innovation Advisor with effect from 23 June 2022. She has also been appointed on the Consultatative and Anti-Corruption Panel for the Malaysian Anti-Corruption Commission as of 1st July 2022.

Prof. Emerita Datuk Dr. Asma binti Ismail holds a BSc (Biology) from the University of Nevada, Reno, USA, M.A. (Microbiology) from Indiana University, USA and a Ph.D (Cellular and Molecular Biology) from University of Nevada, Reno, USA. She also received her Honorary Doctor of Science from the University of Glasgow, Honorary Degree Doctor of the University, Keele University and Honorary Doctorate in Literature from Kyoto University of Foreign Studies (KUFS).

Besides being the first female Vice-Chancellor of Universiti Sains Islam Malaysia (USIM) and Universiti Sains Malaysia (USM), Prof. Emerita Datuk Dr. Asma binti Ismail is also Malaysia's first female Director-General of Higher Education, first female President of Academy of Sciences Malaysia, first female to be appointed as the Chairperson of the Malaysian Qualifications Agency (MQA) and the first woman to be the National Science Advisor to the country. In addition, she was elected to the Academy of Sciences Malaysia in 2003, The Academy of Sciences for the Developing World (TWAS) in 2010, The Islamic World Academy of Sciences in 2016, and was elected as an Honorary Member of the Iranian Academy of Medical Sciences in 2017.

Prof. Emerita Datuk Dr. Asma binti Ismail's contribution to higher education and science development ecosystem are internationally recognised. She has initiated scientific discoveries which have led to the attainment of 16 patents that are commercialised worldwide, and the rapid diagnostic test for typhoid called TYPHIDOT, advocated by WHO. She had also obtained numerous awards and recognitions for her achievements at National and International levels. At the moment, she has shared her knowledge via more than 130 papers, 540 invited talks and more than 80 keynotes at national and global levels.

Prof. Emerita Datuk Dr. Asma binti Ismail has been elected as a member of several international boards including the Board of Governors for Commonwealth of Learning (COL) based in Vancouver, Canada, member of the Directing Board and Executive Committee for Islamic Citation Center based in Shiraz, Iran for the OIC, Member of the College of Fellows, Keele University and as a Governing Advisory Board Member for Ritsumeikan Asia Pacific University, Japan. She has been appointed as Co-Chair, for the Inter Academy Partnership Board comprising of 149 science academies world-wide in 2022 and elected as a member of the International Science Council Standing Committee for Science Planning in 2022.

At the national level she serves as a board member for CREST (Collaborative Research in Engineering, Science and Technology) Center to move STI based companies in the country since 2017, board member of IIUM Holdings Sdn. Bhd, member of the National Science Council chaired by the Prime Minister

and the High-Tech Nation Council chaired by the Minister of MOSTI (Ministry of Science, Technology and Innovation) and member of the National Action Council on Shared Prosperity Vision under the Distinguished Educator category.

She has also been a part of the selection panel for various international awards and recognitions such as TWAS membership (Medical and Health Sciences) and the Islamic Development Bank (IDB) Prize for Women's contribution to development. She was also part of the jury panel for the Merdeka Award, Rhodes Scholarship to select Malaysians to Oxford University, the Loreal Women in Science Award, the Anugerah Akademik Negara (National Academic Award), MOHE Entrepreneurial Award (MEA) and Best Managed Companies, Asia by Deloitte.

Prof. Emerita Datuk Dr. Asma binti Ismail was also awarded as "Tokoh Srikandi" National Award (Academic) in 2018, and "Tokoh Maulidul Rasul" (national level) in 2019, "Tokoh Akademik Negara "in 2022 for her outstanding contributions in the field of higher education, research and innovation as well as policy in the Science and Technology, industry locally and abroad.

Prof. Emerita Datuk Dr. Asma binti Ismail's contributions to Malaysia's higher education system include the establishment of the prestigious National Academic Award (Anugerah Akademik Negara), the establishment of Research Universities in Malaysia and in developing and implementing The Malaysian Education Blueprint (Higher Education) 2013 to 2025.

Conference talk title	**Building resilience in biomedical research**

Speaker's Profile

Professor Mohd Adzir Mahdi
Universiti Putra Malaysia
MALAYSIA
mam@upm.edu.my

Summary

Mohd Adzir Mahdi received the Bachelor degree with first class honors in Electrical, Electronics and Systems Engineering from the Universiti Kebangsaan Malaysia, Selangor, Malaysia in 1996. Later, he received the Master and Ph.D. degrees with distinctions in Optical Fiber Communications from the Universiti Malaya, Kuala Lumpur, Malaysia in 1999 and 2002, respectively. In January 2003, he joined the Faculty of Engineering, Universiti Putra Malaysia, Selangor, Malaysia where he was an Associate Professor and is now a full Professor. Prior to the current appointment, Adzir was an optical design engineer at IOA Corporation, Sunnyvale, USA and a research officer at Research and Development Division, Telekom Malaysia Berhad. Since 1996, he has been involved in photonics research specializing in optical amplifiers and lasers. He has authored/co-authored over 470 scientific papers in journals. His research interest includes optical fiber lasers, optical sensors and nonlinear optics.

Conference talk title

Lab-on-fiber Biophotonic Sensors

Abstract

The emergence of photonic sensors in distinguished fields of physical, biological, and chemical sensing has been attracting intensive research interest in recent decades. Due to their high sensitivity, immunity to electromagnetic interference, low loss, and simplicity, sensors utilizing optical components have been proven to be reliable for structural monitoring, disease detection and material identification. Among the preferred alternatives is a non-uniform cylindrical waveguide known as microfiber. The fabrication of a microfiber is based on a heat and pull mechanism that is applied simultaneously on a standard optical fiber to create a tapered segment. As light travels along this region, a portion will be excited to form evanescent waves that can be manipulated for the benefit of optical sensing. The interaction of this wave and its surrounding material is very unique and measurable in terms of either light absorption or wavelength shift. Moreover, with the addition of bio-receptor layer deposited onto the microfiber surface, the specificity of the sensor towards a precise target of interest can be greatly enhanced. With such advantages, this "Lab-on-fiber" microfiber-based sensor has displayed promising performance in biosensing applications such as Dengue virus and Leptospira bacteria.

Speaker's Profile

Professor Sok Ching Cheong, FASc
Cancer Research Malaysia
MALAYSIA
sokching.cheong@cancerresearch.my

Summary

Professor Cheong leads the Translational Cancer Biology and Digital Health Research Units at Cancer Research Malaysia. She is also the Deputy Chief Scientific Officer at Cancer Research Malaysia and the current Dr. Siti Hasmah Mohd Ali Professorial Chair at the University of Malaya, Kuala Lumpur. Her research aims to improve the management and survival of cancer patients through the understanding of the underlying molecular changes, and through the development of novel treatment approaches, focusing on head and neck cancers. These include the development of immunotherapy based on head and neck cancer antigens. Further, using CRISPR-Cas9 functional screens, her team has identified novel targets for head and neck cancer that are currently being studied. Professor Cheong has received grants from national and international funding bodies including the Newton-Ungku Omar Fund, Newton Fund Impact Scheme, Global Challenges Research Fund and funds from the Ministry of Science, Technology and Innovation, amongst others. In recognition of her research contributions, she has received several national and international scientific awards, most recently the President's Award by the International Association of Oral Maxillofacial Pathologists (IAOP).

Conference talk title

Identifying essential genes in oral cancer development

Abstract

Oral cancers affect more than 350,000 individuals annually and the majority of the cases are diagnosed in Asia. Whilst the characterization of the cancer genome can reveal key actionable mutations that have impacted the clinical treatment of some cancers, such mutations are not commonly found in oral cancers. Hence, the development of targeted therapies for head and neck cancers has been lagging behind compared to other cancers. Although the epidermal growth factor receptor (EGFR) inhibitor (cetuximab) and immunotherapy (pembrolizumab and nivolumab) have been approved for the treatment of OSCC, the response is seen only in a limited subset of patients underscoring the need for more effective therapies. One way of identifying potential therapeutic targets in cancer is to understand the genetic vulnerabilities within a cancer cell. We used high-throughput CRISPR/Cas9 screens to identify the genetic vulnerabilities of oral cancer using unique Asian oral cancer cell lines. I will share our findings on oral cancer essential genes with different degrees of tractability. Combining this with high-throughput drug response data on the same cell lines, we identified candidate drugs for drug repurposing for oral squamous cell carcinoma.

Speaker's Profile

Emeritus Professor Satvinder Singh Dhaliwal
Institute for Research in Molecular Medicine (INFORMM)
UNIVERSITI SAINS MALAYSIA (USM)
satvinder.dhaliwal@usm.my

Summary

Professor Dhaliwal has worked as a Biostatistician for the past 30 years and has accumulated extensive experience, both nationally and internationally, on the practical application of Statistics/Biostatistics in a wide variety of situations. Prof Dhaliwal's research interest includes the application of Biostatistics in the fields of Public Health Research and Clinical Research. He specializes in the development of Clinical Prediction Models in Medical Research. Prof Dhaliwal has published in excess of 200 journal articles (Google Scholar H-index is 50 with over 9,400 citations). His publications have had a significant impact and were often the result of successful national and international research collaborations. Prof Dhaliwal is an Emeritus Professor of Biostatistics and Health Research at Curtin University, Australia. Prof Dhaliwal also holds and Adjunct Professor position with Duke-NUS Medical School in Singapore and is a Professor (Research and Statistics) at Singapore University of Social Sciences. Prof Dhaliwal is also commissioned as a Consultant Statistician to various private and government organizations in Australia and Singapore.

Conference talk title

Logistic regression and predictive models in biomedical research, and its validity

Abstract

Regression techniques are versatile in their application to biomedical research because they can measure associations, predict outcomes, and control for confounding effects of variables. Logistic Regression, in particular, is an efficient and powerful way to analyze the effect of a group of independent variables on a binary outcome variable. The strongest linear combination of variables with the greatest probability of detecting the observed outcome can be identified. Important considerations when conducting logistic regression include selecting independent variables, ensuring that relevant assumptions are met, and choosing an appropriate model building strategy. The fit of the resulting logistic regression will also have to be assessed. Results for independent variables are typically reported as odds ratios (ORs) with 95% confidence intervals (CIs). Sensitivity, Specificity and Area Under the ROC curve are also computed. Prior to reaching definitive conclusions from the results of any of these methods, one should formally quantify the model's internal validity (i.e., replicability within the same data set) and external validity (i.e., generalizability beyond the current sample).

Speaker's Profile

Dr Rangsima Reantragoon
Chulalongkorn University
THAILAND
rangsima.reantragoon@gmail.com

Profile summary

Rangsima Reantragoon, M.D., Ph.D. is an associate professor at the Department of Microbiology, Faculty of Medicine, Chulalongkorn University, Thailand. She graduated with a Bachelor's Degree in Medicine, Chulalongkorn University and went on to further her studies as a PhD in Microbiology and Immunology from the University of Melbourne, Australia. Her previous working experiences include demonstrations at the Gene Technology Access Centre (GTAC) and postdoctoral training at the Peter Doherty Institute for Infection and Immunity. She has much researched in MAIT cells as an immunologist and have now further implemented T cell immunology research into mainly osteoarthritis (OA).

Conference talk title

Osteoarthritis in the immunological context

Abstract

Osteoarthritis pathogenesis encompasses a multidisciplinary approach to its understanding. These include biomechanics, biochemical changes and inflammation of the host. Here, we focus on the immune responses that occur within osteoarthritic patients, covering both innate and adaptive immunity and inflammation within the host.

Speaker's Profile

Dr Arutha Kulasinghe
University of Queensland (Diamantina Institute)
AUSTRALIA
arutha.kulasinghe@uq.edu.au

Profile summary

Dr Arutha Kulasinghe is a Peter Doherty NHMRC Research Fellow and leads the 'Clinical-oMx Lab' at the University of Queensland. Dr Kulasinghe has pioneered spatial transcriptomics using digital spatial profiling approaches in the Asia-Pacific region, contributing to world-first studies for lung cancer, head and neck cancer, and COVID-19. His research aims to understand the underlying pathobiology by using an integrative multi-omics approach. Dr Kulasinghe has published his research in 60 manuscripts and is supported by the NHMRC, Australian Academy of Sciences, Cancer Australia, Cure Cancer, MRFF and numerous philanthropic and hospital foundations.

Conference talk title

Spatial genomics in the era of immunotherapy... and COVID-19

Abstract

Lung cancers remain the leading cause of cancer related mortality and have a poor 5-year survival. Immunotherapies have led to durable benefit in a cohort of non-small cell lung cancer (NSCLC) patients. Identifying those patients likely to achieve benefit remains a clinical unmet need. Whilst predictive biomarkers such as PD-L1 and tumour mutation burden (TMB) have shown utility, the underlying tumour-immune biology is unlikely represented. The composition and activation status of the cellular milieu contained within the tumour microenvironment (TME) is becomingly increasingly recognised as a driving factor dictating response to immunotherapies. In this study, we employed multiplex IHC (mIHC), and digital spatial profiling (DSP) to capture the targeted immune proteome and transcriptome of tumour and TME compartments from ICI-treated (n=41) and standard of care (n=47) NSCLC patient cohorts. Oncotopix® Discovery was also used to analyse the highplex imagery. The analysis pipeline consisted of tissue segmentation (tumor, stroma, necrosis, etc), nuclear detection using a deep-learning algorithm for DAPI, a threshold-based cellular phenotyping step, and spatial analyses. We demonstrate by mIHC that the interaction of CD68+ macrophages with PD1+, FoxP3+ cells is enriched in ICI refractory tumours (p=0.012). Patients sensitive to ICI therapy expressed higher levels of IL2 receptor alpha (CD25, p=0.028) within the tumour compartments, which corresponded with increased IL2 mRNA (p=0.001) within their stroma. IL2 mRNA levels within the stroma positively correlated with the expression of pro-apoptotic markers cleaved caspase 9 (p=2e-5) and BAD (p=5.5e-4) and negatively with levels of memory T cells (CD45RO) (p=7e-4). Immuno-inhibitory markers CTLA-4 (p=0.021) and IDO-1(p=0.023) were supressed in ICI-responsive patients. Tumour CD44 (p=0.02) was depleted in the response group and corresponded inversely with higher stromal expression of one of its ligands, SPP1(osteopontin, p=0.008). Cox survival analysis indicated tumour CD44 expression was associated with poorer prognosis (HR=1.61, p=0.01), consistent with its depletion in ICI sensitive patients. The SOC cohort paralleled similar roles for immune checkpoints and pro-apoptotic markers, with LAG3 (HR=3.81, p=0.04) indicating poorer outcome, and BIM (HR=0.16, p=0.014) with improved outcome. Through multi-modal approaches, we have dissected the characteristics of NSCLC treatment groups and provide evidence for the role of several markers including IL2, CD25, CD44 and SPP1 in the efficacy of current generations of ICI therapy. The signatures are being validated in prospective larger cohort studies.

Speaker's Profile

Dr Klaus Hochleitner
Global Lead Technology Product Specialist, Cytiva (formerly known as GE)
GERMANY
klaus.hochleitner@cytiva.com

Profile summary

Dr. Klaus Hochleitner is Global Technology Product Specialist at Cytiva in Germany. He is working on lateral flow test systems for about 30 years, and currently responsible for supporting new test developments in collaboration with different academic and professional clients.

Conference talk title

Selection of lateral flow test reagents using surface plasmon resonance

Abstract

Lateral flow tests are different from most other immunodiagnostic test systems by the very short interaction times the capture and detector reagents have to bind to their analyte. This requires the selection of reagents that have very fast on-rates and off-rates that are compatible with the intended test duration time. These kinetic data can be generated using surface plasmon resonance. The technology allows for a label-free analysis of reagent properties, and also for selecting antibody pairs for sandwich assays as well as lateral flow membrane family selection. We will present examples of reagent and membrane selection experiments.

Speaker's Profile

Dr Lai Hung Wei
Kochi University
JAPAN
laihw@kochi-u.ac.jp

Summary

Dr. Lai is a USM alumni currently working as a Senior Scientist in the Center for Photodynamic Medicine (CPDM), Kochi University. For seven years, Lai has been working on aminolevulinic acid (ALA)-mediated phototheragnostics – the treatment and diagnosis of cancer using light. He identified protein transporters responsible in the uptake of ALA, which leads to false positive incidence and cytotoxicity towards normal cells. He was recently awarded the "Research Excellence Award" for his research in identifying new method to enhance the efficacy of phototheragnostics. Lai's current affiliation, CPDM, is the pioneer in the field and is the first to treat bladder cancer patients using photodynamic diagnosis with orally administered ALA in Japan. Lai is also the Head Coordinator of Sakura Science Club, Japan Science & Technology, where he is actively involved in organizing various exchange programmes in Japan for students abroad since 2017.

http://www.kochi-u.ac.jp/kms/CPDM/greetings-en.html

Conference talk title

Role of transporters in cancer phototheragnostics

Abstract

Phototherapy, the use of light as a therapy for various diseases, have been introduced since the ancient civilizations and underwent ages of prosperity and decline throughout history. Today, with the addition of photosensitizer such as aminolevulinic acid (ALA), light is being used for cancer diagnosis and therapy as an alternative for standard cancer treatment regimen such as chemotherapy due to its high specificity and low side effect nature. This method for treating cancer is known as phototheragnostics, which comprises of photodynamic therapy (PDT) and photodynamic diagnosis (PDD). Despite its effectiveness in treating cancer, several studies have suggested potential false positive incidence and undesirable phototoxicity towards surrounding normal cells. The culprit behind these phenomena was found to be the high expression of protein transporters involved in uptake of ALA in normal cells. The authors suppressed the expression of these uptake transporters through the usage of common drugs, such as ibuprofen and tryptophan, without affecting the effectiveness of ALA-PDT and PDD towards cancer. On the other hand, novel drug that could enhance the effectiveness of ALA-PDT through the inhibition of transporters responsible in the efflux photosensitizers, particularly towards PDT-resistant cancers, has been identified. Based on these findings, it is believed that the roles of uptake and efflux transporters are pivotal to maximize the effectiveness and specificity of PDT and PDD towards cancer.

Speaker's Profile

Dr Mina Aminlou
CellTech Pharmed Company
IRAN
aminlou@celltech.co

Profile summary

Dr Mina Aminlou MD. PhD is the Medical Director and CRA of CellTech Pharmed company, the largest manufacturer of the stem cell therapy products in middle east and west Asia. The principal goal of this company is the mass production of Allogeneic mesenchymal stem cells specially derived from umbilical cord for various purposes such as Cerebral Palsy, GvHD, Osteoarthritis, ALA, MS, Autism, post MI heart failure and so on. Most of these diseases are incurable and surprisingly MSCs have shown remarkable therapeutic and palliative effect on them. As these products are investigational so for every indication every phase of clinical trials must be performed and the national FDA approval is mandatory before entering the market. Aminlou as a CRA is responsible for coordination and checking the integrity of clinical trials under regulatory guidelines and inspections. Email: aminlou@celltech.co

Conference talk title

How ATMP helps the incurable diseases?

Abstract

Advanced Therapeutic Medicinal products (ATMPs) have received a lot of attention in recent years. They include gene-therapy medicines, cell- therapy medicines and tissue engineered products. They may be used in combination forms. These are very different in comparison to chemical medicined from the aspect mechanism and activity and also the guidelines and regulations of the administration. Like other pharmaceutical products, cGMP production is necessary and the investigators who are prescribing the IMPs should be GCP certified. Although most of the patients in need of these products are struggling with incurable diseases but the administrations must be monitored by the national FDA regulatory in order to avoid any misuse or abuse. As mentioned above cell- therapy is a classified as ATMPs. Somatic cells specially the mesenchymal stem cells derived from different sources are the main cell therapy products. Several sources have been introduced but in recent years the umbilical derived MSC are getting more attention because of their valuable characteristics. These cells are obtained from the umbilical cord of healthy neonates and after cell extraction, processing and expansion they are cryopreserved and stored in the banks. While a patient needs the product, a physician orders the approved amount of the cell therapy product. All steps are performed in sterile and standard condition and only the pre-determined safe and efficient products are preferred to use.

Speaker's Profile

Dr. Azhar Rasul
Government College University Faisalabad
PAKISTAN
drazharrasul@gmail.com

Profile summary

Dr. Azhar Rasul is an Assistant Professor at Faculty of Life Sciences, Government College University Faisalabad. He received MSc and M. Phil degree in Biology from Bahauddin Zakariya University, Multan, Pakistan. He obtained PhD fellowship jointly awarded by Ministry of Education (MOE), Pakistan and China Scholarship Council (CSC), China and completed his Ph.D. in Cell Biology (Chemical Cancer Biology) from Northeast Normal University, China. He later received China postdoctoral fellowship in 2012, Japanese Society for Promotion of Science (JSPS) Postdoctoral fellowship in 2013, and subsequently Tokyo Biochemical Research Foundation (TBRF) fellowship in 2015. He has published over 153 peer-reviewed articles with cumulative impact factor over 336 and with
over 3482 citations. He also has published eleven book chapters. He has presented several invited talks at National and International level. He has attended more than 20 International conferences in Japan, China, South Korea, Dubai, Sri Lanka, Qatar, Turkey, Thailand, Malaysia and France. Under his supervision, thirteen MPhil students completed their research work. Three PhD and two MPhil students are currently working under his supervision. He has obtained several national and international research grants (HEC-Pak Turk Mobility Grant, ISSESCO RG, HEC-NRPU RG(s), The Nagai Foundation Tokyo RG(s) and COMSTECH-TWAS RG). His lab is actively engaged in interdisciplinary research on novel tumor biomarkers, cancer-related health disparities, identification of non-toxic anticancer compounds for various hallmarks of cancer (cancer stem cells, cancer cell metabolism, and tumor hypoxia) from natural sources and development of highly efficient green extraction methodologies for preparation of active constituent enriched-bioactive extracts libraries. He is reviewer and editorial board member of several well-reputed journals.

Conference talk title

Malic Enzyme 2 (ME2): Novel and selective target for cancer therapy

Abstract

The development of cancer-specific therapeutics has been limited because most of healthy cells and cancer cells depend on common pathways. The recent evidence suggests that targeting the cancer specific metabolic and mitochondrial remodelling may offer selectivity in cancer treatment. Malic enzyme 2 (ME2) is predominantly overexpressed in a number of tumor types and inhibition of ME2 results in decreased tumor growth. Reversing the mitochondrial suppression and the increased glucose consumption in cancer cells is an important step and has great potential for therapeutic drug developments. Therefore, we performed library screen to discover novel inhibitors of tumor metabolic enzyme, ME2, for cancer treatment. Here, progress regarding screening for ME2 inhibitors will be reported.

Speaker's Profile

Dr Shimaa Eissa
Alfaisal University
KSA
seissa@alfaisal.edu

Dr Shimaa Eissa
Alfaisal University
KSA
seissa@alfaisal.edu

Profile summary

Dr. Shimaa Eissa obtained her Ph.D. degree in Science of Energy and materials from INRS-EMT, Varennes, Canada. Her research is focused on the development of electrochemical biosensors for various foodborne, diagnostic, and environmental applications exploiting aptamers as novel biorecognition receptors as well as nanomatrials as transduction elements. Dr. Shimaa was a visiting researcher at Université du Québec à Montréal (UQAM) for 2 years. In 2016, she joined the Chemistry Department, Alfaisal University, Riyadh KSA as an assistant research professor. Dr. Shimaa has published over 65 articles with more than 2300 citations. She received several awards including the L'Oréal-UNESCO "For Women In Science"-Middle East award 2016. She supervised several graduate and undergraduate students in various research projects. She is a member in different scientific organizations including the Arab, German young academy of Sciences (AGYA).

https://scholar.google.ca/citations?user=jIAURowAAAAJ&hl=en

Conference talk title

Aptamers in diagnostic electrochemical biosensors

Abstract

Aptamers are single stranded DNA or RNA molecules selected in vitro from large libraries of synthetic random sequences. The first aptamers have been reported in 1990 and much progress has been made to date. Many aptamers have been selected against wide range of targets, including proteins, small molecules, viruses and cells. Aptamers as recognition receptors showed several advantages over antibodies particularly in disease diagnosis. Aptamers are prepared by in vitro selection procedure without using experimental animals and they can be developed even against low molecular weight metabolic biomarkers which is hardly achievable with antibodies. Aptamers can be selective to different parts of the target molecules and can be easily synthesized with high purity, reproducibility at very low cost, in contrast to antibodies that needs experimental animals and suffers from batch-to-batch reproducibility. The aptamers can be chemically modified easily by various chemical tags allowing the immobilization of aptamers onto various solid supports and they are also highly stable at different conditions. Due to these advantages, aptamers as recognition receptors have received considerable attention as novel capturing agents to replace antibodies in biosensors for various diagnostic applications. Aptamer-based sensors (aptasensors) have been designed using different strategies, particularly the conformation change of the aptamer upon binding with the target. Moreover, the binding of aptamers to their complementary nucleic acids can be exploited in sensing schemes. Aptamers had been integrated in various electrochemical Biosensors for diagnostic applications combining the high selectivity of the biorecognition processes with the high sensitivity, possibility of multiplexing, capability of miniaturization and low cost of electrochemical transducers. Moreover, unlike optical biosensors, electrochemical biosensors are not affected by sample turbidity, or interference from fluorescing compounds commonly found in biological samples. Here, we discuss the utilization of aptamers in various electrochemical biosensors for diagnostic applications.

Speaker's Profile

Tang Kok Mun
Biogenes Technologies Sdn Bhd
MALAYSIA
tang.rapid@gmail.com

Profile summary

Mr. Tang Kok Mun is the co-founder and CEO of Biogenes Technologies, a Malaysian-based company focusing on development and commercialisation of aptamer-based molecular diagnostic technologies for applications in human healthcare, animal healthcare, agricuture, aquaculture, food safety and pollution monitoring. Mr Tang have over 15+ years of experience in bringing technologies from R&D stage to commercial markets. Some of his earlier startups and projects are in technology areas such as smart water monitoring system, biomass utilization for renewable energy and bio-based chemicals, as well as genomics in aquaculture. Mr. Tang majors in Chemical Engineering and Master in Business Administration from University of Malaya, as well as having graduated from Stanford University Center of Professional Development in Entrepreneurship. He also holds the position of Industrial Fellow in Universiti Sains Malaysia under Institute for Research in Molecular Medicine (INFORMM), and serving as one of panel experts in Malaysian Rubber Council (MRC).

Conference talk title

Aptamers – Digitalizing Biotechnology for Global Diagnostics

Abstract

The recent COVID-19 has highlighted the grave inequality in access to healthcare diagnostics between rich and poor nations. Biogenes believes that the adoption of a digital form of biotechnology is able to expand the access of healthcare diagnostic to all corners of the world. This is made possible with the development and use of oligo-based aptamers instead of antibodies as the capturing element in diagnostic products. By bringing aptamer design, development and synthesis into the digital realm, we attempt to create an eco-system of researchers, entrepreneurs, healthcare practitioners, global health bodies and governments of nations to enable everyone in this world to have affordable and rapid access to healthcare diagnostics

Speaker's Profile

Professor Ian Paterson
University of Malaya
MALAYSIA
ipaterson@um.edu.my

Profile summary

Ian Paterson is a professor of cancer biology at the University of Malaya. He obtained his BSc degree in biology from the University of London and his PhD in biochemistry from the University of Bath. From 1992 to 2010 he worked at the University of Bristol, UK, where he developed his interest in cancer biology. Prof Paterson has studied the molecular pathogenesis of head and neck cancer, and oral squamous cell carcinoma in particular, for more than 20 years and has published more than 100 articles in ISI journals. For the past 10 years, he has worked at the University of Malaya where he continues to focus on the molecular basis of head and neck cancers, including oral and nasopharyngeal carcinomas.

https://umexpert.um.edu.my/ipaterson.html

Conference talk title

Sphingosine 1-phosphate signaling in cancer

Abstract

Sphingosine 1-phosphate (S1P) is a small bioactive lipid that is formed when sphingosine is phosphorylated by sphingosine kinase 1 and 2 (SK1/2). S1P exerts its effects following binding to a family of five G protein-coupled receptors, known as S1P1–5. Following receptor activation, multiple signalling cascades are activated, allowing S1P to regulate a range of cellular processes, such as proliferation, apoptosis, migration and angiogenesis. Over the past 15 years, evidence has accumulated to demonstrate the involvement of SKs and S1P receptors in cancer progression; the oncogenic effects of S1P can result from alterations in the expression of one or more of the S1PRs and/or the enzymes that regulate the levels of S1P. More recently, S1P signalling has also been shown to influence the behaviour of cells within the tumour microenvironment to create a permissive environment for tumour growth. Consequently, components of the S1P signalling pathway represent targets for potential therapeutic intervention in the treatment of cancer. The role of S1P signalling in cancer will be discussed along with opportunities to target this pathway therapeutically.

Speaker's Profile

Professor Mehmet Özsöz
Near East University
NICOSIA CYPRUS
mehmet.ozsoz@neu.edu.tr

Profile summary

Prof Dr. Mehmet Özsöz received the BS degree from the Department of Chemical Engineering, Middle East Technical University,Ankara, Turkey, PhD in Analytical Chemistry from Faculty of Pharmacy, Ege University. He has been as a post doc for two years in the area of Electrochemical Biosensor in USA. He has been as visiting scientist in Lancaster University of Chemistry Department. He has authored or co-authored over 150 scientific publications with h factor of 54 and he has given over 50 invited lectures and conference contributions world-wide. Some of his publications have appeared in very reputable scientific journals such as ACS Langmiur, ACS Analytical Chemistry, ACS Synthetic Biology, RSC Analyst, and Biosensors & Bioelectronics. Recipient of "Science Award" (Chemistry) of the Scientific and Technological Research Council of Turkey (TUBITAK) on the area of Electrochemical Biosensors. His name appeared in the 45th rank among the "100 Turks Guiding Science" book published by Sanko Holding in May 2017. He is selected in Stanford University List of Top 2% Scientists Worldwide 2021. His research interest is Electrochemical Biosensors, Crispr Cas systems, Artificial Intelligence

Conference talk title

CRISPR powered electrochemical biosensors

Abstract

There has been increasing interest in electrochemical biosensors over the past decade (1). The discovery of CRISPR-Cas (clustered regularly interspaced short palindromic repeats and CRISPR-associated proteins) systems revolutionized genome engineering (2). In addition, it opened up new possibilities in electrochemical biosensing technologies (3, 4). CRISPR-associated (Cas) endonucleases enable the targeting of specific nucleic acid sequences based on Watson-Crick base pairing between the CRISPR-RNA (crRNA) and the target nucleic acid. Cas9, Cas12, and Cas13 are endonucleases of Class 2 CRISPR-Cas systems and they are the most frequently used Cas enzymes in biosensing studies (5). While Cas9 binds and cuts the target dsDNA, the nuclease-deficient version of it, namely dead Cas9, only binds to the target DNA. Cas12 and Cas13 bind DNA and RNA, and they perform the indiscriminate cleavage of ssDNAs and ssRNAs in solution, respectively (5). This type of nuclease activity is called collateral (trans) cleavage and has been harnessed to cleave electrochemical reporter nucleic acids consist of ssDNA or ssRNA (6, 7). In this way, a Cas endonuclease sense the presence of a target nucleic acid in a solution and its activation results in the cleavage of electrochemical reporter ssDNA or ssRNA which eventually generate a detectable signal. Beyond CRISPR-based biosensors, CRISPR-Cas-mediated genomic mutations can be detected using electrochemical biosensors. Detection of CRISPR-Cas9-mediated mutations has been performed using a carbon nanotube-modified pencil graphite electrode (8). After creating a double-strand break with Cas9 in murine cells, 98 nt single-stranded oligodeoxynucleotide (ssODN) was introduced for Homology Directed Repair (HDR)-based gene editing. An ssDNA probe was designed to verify the mutated sequence electrochemically. After performing PCR for the target sequence, PCR products were hybridized with the probe. The difference between the electrochemical oxidation signal of the ssDNA probe and dsDNA formed by the hybridization of the target sequence with the probe informed us about the presence of mutant DNA and the success of genome editing.

Speaker's Profile

Professor Peter Hoffmann
Lloyd Sansom Chair
President Australasian Proteome Society
Treasurer international HUPO
Clinical Health Sciences
University of South Australia
AUSTRALIA
peter.hoffmann@unisa.edu.au

Profile summary

Professor Peter Hoffmann is President of the Australasian Proteomics Society, Conference Chair for the National Meeting of the Australasian Proteomics Society and is Treasurer of the international Human Proteome Organisation (HUPO). For fifteen years, Peter's research has delved into the identification of low abundant proteins and the mapping of their posttranslational modifications and their use as potential biomarkers for early detection of diseases, one of the biggest challenges in proteomics. He is leader in the field of Mass Spectrometry Imaging and his research group was the first to use this technology in Australia. He is Director of the NCRIS Bioplatforms Australia Node for Tissue Imaging Mass Spectrometry. He has experience transforming research into industry-relevant outcomes, forming OncoDX to commercialise patented biomarkers for the early detection of ovarian and gastric cancer.

https://people.unisa.edu.au/?homepageid=Peter.Hoffmann

Conference talk title

Statistical methods and machine learning in the diagnosis of endometrial cancer

Abstract

Classic histopathological examination of tissues remains the mainstay for cancer diagnosis and staging. In some cases, histopathologic analysis yields ambiguous results, leading to inconclusive disease classification. Here, we set out to explore the diagnostic potential of mass spectrometry-based imaging for tumour classification based on proteomic fingerprints. Supervised machine learning (ML) approach was applied to large MALDI MSI datasets from endometrial cancer (EC) TMAs consisting of 302 unique patients. The pathologist labels for these patients included 43 patients of primary tumour with lymph node metastasis (LNM), 214 patients with no LNM, and 45 patients that were unclassified/not tested. Combining mass spectrometry with ML, we were able to predict the presence of LNM in primary tumour of EC with an overall accuracy of 80% (90% sensitivity and 69% specificity). In addition, this approach was able to distinguish colorectal tumour from normal tissue with an overall accuracy of 98% (98.2% sensitivity and 98.6% specificity). Using supervised ML of EC MALDI MSI data, in conjunction with pathologist annotation and patient meta data, this study set to establish approaches for binary sample classification problems. This is achieved based on the MALDI MSI data alone, without any need to identify the m/z values. Overall, these results highlight the potential of this technology to determine the optimal treatment for cancer patients to reduce morbidity and improve patients' outcomes.

Speaker's Profile

Professor Pongrama Ramasoota
Mahidol University
THAILAND
pongrama.ram@mahidol.ac.th

Profile summary

Dr. Pongrama Ramasoota is working as Director of Center of Excellence for Antibody Research (CEAR) and Head, department of Social and Environmental Medicine, Faculty of Tropical Medicine, Mahidol University.   He is lead investigator in the research project "Neutralizing human monoclonal antibodies (NhuMAbs) against 4 serotypes of Dengue virus" funded by Science and Technology Research Partnership for Sustainable Development (JST-JICA-SATREPS), Japan Society for the promotion of Sciences (JSPS). Now this NhuMAb is under licensing by Bio-Pharma Company from USA. and will go for phase-I trial in 2024 and plan to sell in 2028. He also led other research project on development of therapeutic human monoclonal antibodies against virus, such as Sar-Cov 2 and Rabies. Dr. Ramasoota holds Doctor of Veterinary Medicine (DVM) from Kasetsart University, Master of Public Health, Mahidol University, Thailand and Master of Science and Ph.D. in Molecular biology from Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden. He was awarded Thailand Outstanding Researcher 2020, Thailand outstanding Veterinarian 2016, Outstanding Research and Invention Awards from National Research Council of Thailand (NRCT) in the years 2008-2010, 2014 and 2016, Gold medal award from 2014 Taipei Invention show & Techno mart, 2008 Korea inventor Promotion Association (KIPA), 2008 International Federation of Inventor Association (IFIA), and. He has published more than 70 publications with 4 international patents.

https://www.tm.mahidol.ac.th/tropmed-staff/Pongrama-Ramasoota.php

Conference talk title

Therapeutic Antibody against E and Ns1 proteins of dengue virus

Abstract

Dengue hemorrhagic fever (DHF) cause by the mosquito borne Dengue virus (DENV) has become the world public health problem due to global warming and globalization. Each year, 100 million Dengue cases required hospitalization. World Health Organization aim to reduce Dengue mortality to be at 50% in the year 2020.   But until present, there is no specific drug for Dengue treatment. By using SPYMEG myeloma cell fused with peripheral blood mononuclear cell (PBMC) obtained from Dengue patients, the hybridoma cell producing neutralizing human monoclonal antibodies (NhuMAbs) anti envelope protein against 4 serotypes of DENV has been established at CEAR. Two candidates NhuMAb (clones 19 and 54) were successfully pre-clinically tested in vitro by 95-100 % neutralized all 4 serotypes of 20 clinical isolates DENV and in vivo tested by significantly decreased mortality of prior DENV intra-cranially mice and eliminated DENV (from 1010 to be 0) in blood of DENV challenged Marmoset monkeys within 2 days. To make NhuMAb without causing ADE, FC-modified at LALA position of both NhuMAb clones was established. Industrial scale production of NhuMAbs using the Food and drug administration (FDA) accepted method of Stable expressed Chinese Hamster Ovary (CHO) cell produced at GMP facility was prepared at the licensing company. AG129 mice that 24 hrs. prior subcutaneously injected with 105 FFU DENV followed by treated with Fc-modified NhuMAb clone 54 showed almost 100 % survival. The dose finding was also performed in AG129 mice and found that the dose for first in human trial are 4 - 6 mg/kg. The licensing company is ongoing to test this Fc-modified NhuMAb clone 54 for further PK, PD and viral clearance in nonhuman primate tests in the year 2023, followed by Phase 1 clinical trial in the year 2024.

PANELIST

Forum Panelist's Profile

Professor Dr Norazmi Mohd Noor, FASc
Universiti Sains Malaysia
MALAYSIA
norazmimn@usm.my

Profile summary

Norazmi Mohd Nor, is a Professor of Molecular Immunology at the School of Health Sciences, Universiti Sains Malaysia. He obtained his B.Sc (Hon) from Monash University and PhD from Flinders University, Australia. He has held many important administrative positions in USM, including the Director of the Institute for Molecular Medicine, and Dean of the School of Health Sciences. Norazmi's main research interest is in the development of vaccines against cholera, tuberculosis and COVID-19. He has secured about RM20m (about USD5m) in research funding as principal investigator from national and international agencies throughout his career. Norazmi has research collaborations with several international institutions and frequently sits in national and international review panels for research grant proposals. A few years ago, he initiated a global project to compile opinions papers from renowned experts in the field of TB vaccine development, in a book entitled "The Art & Science of Tuberculosis Vaccine Development", that was published by Oxford University Press (Malaysian branch) which is freely downloadable. Norazmi has been involved in many strategic planning for research in Malaysia, the latest being the National Vaccine Development Roadmap in 2021. Norazmi was the Founding Senior VP (Strategic & Planning) for the Malaysian Biotechnology Corporation and currently advises several biotechnology companies. Based on his scientific contributions, Norazmi was inducted as a Fellow of the Academy of Sciences, Malaysia in 2012.

Forum Panelist's Profile

Professor Ir. Dr Fatimah Binti Ibrahim
Universiti Malaya
MALAYSIA
fatimah@um.edu.my

Profile summary

Professor Ir. Dr. Fatimah Ibrahim received her B.Sc.E.E. from Marquette University, USA in 1989. She obtained her M.Sc. Electronics (Medical Systems) from University of Hertfordshire, UK in 1994 and Ph.D. in Biomedical Engineering from University of Malaya (UM), Malaysia in 2005. She is a Professor of Biomedical Engineering, UM, the head of Centre for Innovation in Medical Engineering (CIME), and advisor for the Center of Printable Electronics, UM. She is the senior member of IEEE, fellow of Institute of Engineer Malaysia (IEM), and fellow of Academy Science Malaysia (ASM). Her research interests are in physiological measurement and modeling, biosensors, BioMEMS, bioinstrumentation, and artificial intelligence in medicine. She owned 16 patents including 3 commercialised patents. In recognition of her research innovations, she has received 8 top awards (Gold medal/best award/special award), 3 Silver Medals, and 2 bronze medals at various international and national invention exhibitions. She has been awarded the Top Research Scientist Malaysia (TRSM 2019) by the Academy of Sciences Malaysia (ASM). Recently, she received the IFMBE Laura Bassi Award 2022 (an award attributed to a female biomedical engineer for her outstanding research contributions in the field of medical and biological engineering) by the International Federation of Medical and Biological Engineering (IFMBE), USA.

Forum Panelist's Profile

Dr Low Ley Hian
Director of Business Development
InterVenn Biosciences (Malaysia)
leyhian@venn.bio

Profile summary

Ley Hian obtained his PhD (Neuroscience) from The Florey Institute of Neuroscience and Mental Health, The University of Melbourne in 2013 and relocated to San Francisco for his postdoctoral fellowship at the University of California San Francisco (UCSF). In 2017, Ley Hian crossed path with InterVenn Biosciences and became an early team member of InterVenn Biosciences. Ley Hian currently serves as the Director of Business Development at InterVenn.

Forum Panelist's Profile

Mr Ivan Hoh
Founder & Chief Executive Officer, Codon Genomics
MALAYSIA
ivan.hoh@codongenomics.com

Profile summary

"Harnessing the power of scientific knowledge for the future of Malaysia – Scientific breakthroughs by Malaysians for Malaysia"

For Ivan Hoh, science has always been sparked curiosity and fascination, even as a teen. Born and bred in Ipoh, Perak, Ivan nurtured his love for science and discovering new knowledge by reading everything he could get his hands on and asking incessant questions to anyone who would answer. By the time he enrolled in Universiti Kebangsaan Malaysia (UKM) as a fresh-faced molecular biology student, he was firmly convinced that his path in life lies in the study of science.

In his university years as an undergraduate and Masters student, he seized the opportunity to work under inspiring local scientists at the then-newly founded Malaysia Genome Institute (MGI), learning all he could about high throughput sequencing, management and analysis in the Lates calcarifer transcriptome project. Having gotten a taste of what the study of genomics and bioinformatics has to offer, Ivan embarked on a new journey to prove to the world that Malaysian scientists can contribute a whole lot to the world.

In 2010, two years after graduating with a MSc in Genomics from UKM and having gained some experience as a Sequencing Project Manager, Ivan founded Codon Genomics with fellow Malaysian scientists with his vision firmly set on providing powerful genomic applications to every possible industry. Today, Codon Genomics is one of the fastest growing bioinformatics company in South East Asia and the de facto partner for digitization and data analytics.

As a young man, Ivan was inspired and motivated by fellow scientists he has met and he believes the future lies in humans' will and ability to innovate science. To ensure his vision for science in Malaysia to continue moving forward, Ivan is actively participating in efforts to invest in young Malaysian scientists. Currently, he is on the various committees and advisory boards in local institutions like UKM, Universiti Putra Malaysia (UPM), and Management and Science University (MSU). As a member of the International Rubber Research Development Board associate member, Ivan is also part of the committee for the Malaysia Science, Technology and Innovation (STI) Masterplan Planning.

Ivan, with more than 35 Tier One scientific publications and 750 citations, has set his sights on steering Codon Genomics towards contributing further in advancing science and society by utilising biological data and analytics. In this age of Big Data analytics making leaps and bounds in harnessing the power of information for the understanding our world better through science, Ivan with his team is set on the path that leads to more breakthroughs and solutions to today's scientific questions.

ORAL

CHAIRPERSON :	Dr Daruliza Kernain (USM, INFORMM)
JUDGES :	1. Dr Nik Yusnoraini Yusof (USM, INFORMM)
	2. Dr Farizan Ahmad (USM)
WEBEX LINK :	(Hall 3)

	ORAL PRESENTATION 1A [11 Oct 2022, 1515 - 1715pm]
O-1	**Tissue-based proteomics: insight into molecular mechanisms in cervical carcinogenesis** *Gaayathri Kumarasamy, Mohd Nazri Ismail, Sharifah Emilia Tuan Sharif, Christopher Desire, Parul Mittal, Peter Hoffmann and Gurjeet Kaur*
O-2	**The expression of apoB and 4HNE in overweight-and obese-related colorectal carcinoma tissues** *Ng Phei Ying, Siti Norasikin Mohd Nafi, Nur Asyilla Che Jalil, Kueh Yee Cheng, Lee Yeong Yeh and Anani Aila Mat Zin*
O-3	**Quantitative proteomics analysis of insecticide resistant *Ae. aegypti*** *Abubakar Shettima, Intan H Ishak, Benjamin Lau, Hadura Abu Hasan and Noorizan Miswan and Nurulhasanah Othman*
O-4	**Clarithromycin resistance in *Helicobacter pylori* is associated with genetic polymorphism of virulence factors** *Anis Rageh Al-Maleki and Naim Rosli*
O-5	**Metabolome analysis of induced-resistance *Helicobacter pylori* against clarithromycin** *Naim Rosli and Anis Rageh*
O-6	**The antimicrobial effect of vinegar on *Escherichia coli* O157:H7 isolated from lettuce** *Yu Xiang Soo and Seow Hoon Saw*
O-7	**Raman-based spectroscopic techniques for Leptospira DNA detection** *Anis Athirah Abdul Razak, Fatin Hamimi Mustafa, Hui Yee Chee, Mohd Adzir Mahdi and Fariza Hanim Suhailin*
O-8	**Autophagy modulation as the potential target in the combination treatment of BZD9L1 and regorafenib in colorectal cancer** *Deepa Rajendran, Yi Jer Tan, Yeuan Ting Lee and Chern Ein Oon*

CHAIRPERSON :	Dr Anizah Rahumatullah (USM, INFORMM)
JUDGES :	1. Dr Nor Hayati Yusof (USM)
	2. Dr Agustine Nengsih Binti Said @Fauzi
WEBEX LINK :	(Hall 4)

	ORAL PRESENTATION 1B [11 Oct 2022, 1515 - 1715pm]
O-9	**Determination of solubility and dissolution profile of BZD9L1 sirtuin inhibitor** *Pei Yi Mok, Kah Hay Yuen and Chern Ein Oon*
O-10	**Performance evaluation of nested polymerase chain reaction (nPCR), light microscopy and Plasmodium falciparum histidine rich protein 2 rapid diagnostic test (pfhrp-2 RDT) in the detection of falciparum malaria in Akure, Nigeria** *Oluwaseun Bunmi Awosolu, Zary Shariman Yahaya and Meor Termizi Farah Haziqah*
O-11	**Association of single nucleotide polymorphisms on iron regulating genes with iron metabolising parameter** *Liew Jin Rou, Loo Keat Wei and Teh Lai Kuan*
O-12	**Stable expression of anti-BmR1 IgG4 antibody** *Jacqueline Kar Kei Mark and Gee Jun Tye*
O-13	**The role of the protein phosphatase 4 regulatory subunit 1 (PP4R1) in leukaemia** *Maryam Behjat and Mirna Mourtada-Maarabouni*
O-14	**X-chromosome wide association in Thai SLE patients** *Krisana Jaiwan, Yao Lei, Manon Boonbangyang, Punna Kunhapan, Nusara Satproedprai, Surakameth Mahasirimongkol, Prapaporn Pisitkun, Nattiya Hirankarn, Wang Yong Fei and Pattarin Tangtanatakul*
O-15	**The effect of mesenchymal stem cells-mediated macrophages activation on breast cancer progression** *Nur Ramziahrazanah Jumat, Muhammad Amir Yunus, Badrul Hisham Yahaya, Rafeezul Mohamed*
O-16	**Therapeutic properties of Malaysian stingless bee pollen and its protective effect against DNA damage** *Nurdianah Harif Fadzilah and Wan Adnan Wan Omar*

CHAIRPERSON :	Associate Prof Dr Khoo Boon Yin
JUDGES :	1. Dr. Norsyahida Ariffin (USM)
	2. Dr Norhahani Mohd Redzuan (USM)
WEBEX LINK :	(Hall 5)

	ORAL PRESENTATION 1C [11 Oct 2022, 1515 - 1715pm]
O-17	Novel thermoresponsive Chitosan/PEG based hydrogels and their prospective biomedical applications *Aniqa Junaid, Murtaza Najabat Ali, Mariam Mir and Sadia Hassan*
O-18	Acute and sub-chronic toxicological evaluation of probiotic strain Lactobacillus rhamnosus GG in Sprague Dawley rats *Venkata Kanthi Vaishnavi Vedam, Arun Kumar Adhikary and Parasuraman Subramani*
O-19	In-Depth Investigation of microRNA Methylome Signature in Colorectal Cancer *Nurul Qistina Rus Bakarurraini, Rashidah Baharudin, Imilia Ismail, Nadiah Abu, Siti Aishah Sulaiman, Learn-Han Lee and Nurul Syakima Ab Mutalib*
O-20	Identification of LRRC17 as colonic fibroblast activation marker and its potential role in colorectal cancer progression *Sahira Syamimi Ahmad Zawawi and Marahaini Musa*
O-21	Effect of polyphenolic-rich fraction of cornsilk (*Stigma maydis*) in streptozotocin-induced diabetic rats *Siti Azhani, Nor Syamim, Nur Fatihah and Sabreena Safuan*
O-22	Phytochemical, anti-microbial activity and anti-proliferation test against human cancer-origin cell lines using water extracts of *Momordica cochinchinensis* (Gac fruit) *J T Priscilla, Ming-Thong Ong and Sreeramanan S*
O-23	Conjugates between *P. marcocarpa* aqueous extract and TiO2 exhibited a synergistic antimicrobial effect *Fanne Yeoh Fern Nii, Ong Ming Thong, Lim Gin Keat and Srimala Sreekantan*
O-24	Cytotoxicity, proliferation and migration assessment of BHMC, the curcuminoid analogue on human liver cancer cells, HepG2 *Muhammad Aminuddin Mohd Shafiee, Mohd Ashraf Muhamad Asri, Nurul Asyikin Mahbud, Nur 'Aqilah 'Inani Hanapi, Marwah Salaebing, Zulkefley Othman, Armania Nurdin and Sharifah Sakinah Syed Alwi*

CHAIRPERSON :	Dr. Sylvia Annabel Dass (USM)
JUDGES :	1. Dr. Chew Ai Lan (USM)
	2. Dr. Noor Fatmawati Mokhtar (USM)
WEBEX LINK :	(Hall 6)

	ORAL PRESENTATION 1D [11 Oct 2022, 1515 - 1715pm]
O-25	Unraveling the tumour-regulatory role of miR-3934 in human breast cancer *Zhi-Xiong Chong, Swee-Keong Yeap, Chee-Mun Fang and Wan-Yong Ho*
O-26	Whole-genome-scale identification of novel non-protein-coding RNAs controlling cell proliferation and survival through a functional forward genetics strategy *Daniel P Tonge, David Darling, Farzin Farzaneh and Gwyn Williams*
O-27	Selection of T-cell receptor (TCR) like antibody against Human Leukocyte Antigen A-2 (HLA-A2) for cervical cancer diagnostics *Rehasri Selva Rajan, Sylvia Annabel Dass, Tye Gee Jun and Venugopal Balakrishnan*
O-28	Development of T-cell receptor-like antibody against human leukocyte antigen A-11 (HLA-A11) human papillomavirus (HPV) type 16 & 18 oncoprotein E7 for the diagnosis of cervical cancer *Azrin Syazana Zulcafli, Sylvia Annabel Dass, Tye Gee Jun and Venugopal Balakrishnan*
O-29	High throughput molecular profiling of bacterial diversity in Johor mangroves *Roshan Mascarenhas, Oh Bi Han, Ng Xin Yan, Dominic Kay, Kwa Yee Chu, Pang Kok Lun, James Sy-Keen Woon, Nadine Nograles and Mahibub Mahamadsa Kanakal*
O-30	Ranking of the *Mycobacterium tuberculosis* T-cell epitopes using tabulated immune properties for potential Tuberculosis diagnosis and vaccine candidates *Nurul Syahidah Shaffee, Ezzeddin Kamil Mohamed Hashim, Armando Acosta Dominguez, Maria Elena Sarmiento Garcia San Miguel, Siti Suraiya Md Noor and Norazmi Mohd Nor*
O-31	Desiccation tolerance mediates ST239-SCCmec type III-SCCmercury to ST22-

	SCCmec type IV MRSA Clonal Replacement in Hospital Settings *Nurul Amirah binti Mohamad Farook, Raja Mohd Fadhil Raja Abd Rahman, Sharifah Azura Salleh, Muttaqillah Najihan Bin Abdul Samat and Hui-min Neoh*
O-32	**IL-21 gene silencing suppressed the proliferative activity of HCT116 and HT-29 colorectal cancer cells** *Ong Ching Yi, Ong Ming Thong and Khoo Boon Yin*

CHAIRPERSON :	**Dr. Nurulhasanah Othman**
JUDGES :	1. Associate Professor Dr. Mohd Nazri Bin Ismail
	2. Dr Yazmin Binti Bustami
WEBEX LINK :	**(Hall 7)**

	ORAL PRESENTATION 2A [12 Oct 2022, 1015 am – 1215pm]
O-33	**Ligand-based pharmacophore modeling, molecular docking and molecular dynamics study targeting prolyl oligopeptidase enzyme for effective treatment for Parkinson's disease: computational approach** *Yahaya Sani Najib, Yusuf Oloruntoyin Ayipo, Waleed Abdullah Ahmad Alananzeh and Mohd Nizam Mordi*
O-34	**Inhibitory effects of andrographolide in PC-3 cell line and the induction of apoptosis via the involvement of caspases activity** *Janany Manimaran and Daruliza Kernain Mohd Azman*
O-35	**Lentiviral modification of hard-to-transduce NK-92MI cells** *Chin Ding Sheng and Tye Gee Jun*
O-36	**Higher wheal sizes of *Dermatophagoides farinae* sensitization exhibit worse nasal symptoms in allergic rhinitis patients** *Siti Nur Husna Muhamad, Norasnieda Md Shukri, Hern-Tze Tina Tan, Noor Suryani Mohd Ashari and Kah Keng Wong*
O-37	**Immunoinformatics analysis on human coronavirus spike protein for universal immunogen discovery** *Chin Peng Lim, Boon Hui Kok, Hui Ting Lim, Chiuan Yee Leow and Chiuan Herng Leow*
O-38	**Andrographolide induced apoptosis by enhancing c-Myc/p53 in human glioblastoma DBTRG-05MG cell line** *Nurul Syamimi Othman and Daruliza Kernain*
O-39	**In vitro uptake and activation of human dendritic cells by liposomes derived from total lipid of *Mycobacterium smegmatis*** *Nurfatihah Azlyna Ahmad Suhaimi, Nor Asyikin Nordin, Siti Suraiya, Rohimah Mohamud and Ramlah Kadir*
O-40	**Identification of medicinal fungi by molecular analysis** *Eng Wei Keat, Leow Chiuan Yee, Lai Ngit Shin, Sasidharan Sreenivasan and Leow Chiuan Herng*

CHAIRPERSON :	**Associate Prof Dr Choong Yee Siew**
JUDGES :	1. Associate Professor Dr. Darlina Binti Md Naim
	2. Dr Shazana Hilda Binti Shamsuddin
WEBEX LINK :	**(Hall 8)**

	ORAL PRESENTATION 2B [12 Oct 2022, 1015 am – 1215pm]
O-41	**Effect of Andrographolide on proliferation, migration, and invasion of MDA-MB-231 and MCF-7 cell lines** *Deeza Syafiqah Mohd Sidek and Daruliza Kernain Mohd Azman*
O-42	**Culture and biochemical testing versus 16S rRNA Next-Generation Sequencing for bacterial identification from clinical samples: Practicability, cost and turn-around time in a Malaysian laboratory** *Nurnabila Syafiqah Muhamad Rizal, Hui-min Neoh, Ramliza Ramli, Petrick@Ramesh A/L K Periyasamy, Alfizah Hanafiah, Muttaqillah Najihan Abdul Samat, Toh Leong Tan, Kon Ken Wong, Sheila Nathan, Sylvia Chieng, Seow Hoon Saw and Bee Yin Khor*
O-43	**Isolation and production of recombinant monoclonal antibody proteins against a *Toxocara canis* antigen using phage display technology** *Zamrina Baharudeen and Anizah Rahumatullah*
O-44	**Optimization of transient expression of recombinant IgG binding protein, FcγRIIa**

	Shin Yi Gan, Gee Jun Tye, Ai Lan Chew and Ngit Shin Lai
O-45	**Cloning of IgM Fc receptor for mammalian expression system** *Hai Shin Pung, Gee Jun Tye and Ngit Shin Lai*
O-46	New β-carboline compound as a promising anticancer agent in chronic myelogenous leukemia (CML) *Meroshine Nageswara Rao, Mazlin Mohideen, Leong Sze Wei, Thiruventhan Karunakaran and Nur Azzalia Kamaruzaman*
O-47	**Discovery of potent small molecule inhibitor for dengue through *in silico* and *in vitro* approaches** *Norshidah Harun, Leow Chuan Herng, Kamarulzaman Ezatul Ezleen, Abdul Wahab Habibah, Ramachandran Vignesh and Lai Ngit Shin,*
O-48	**Systematic review on preclinical reports: Titania Nanotube Arrays technology for medical orthopaedic screw implant application** *Tan Chia Yi, Rabiatul Basria S M N Mydin and Mohd Sharizal Abdul Aziz*

CHAIRPERSON :	**Dr Daruliza Kernain**
JUDGES :	1. Dr. Eugene Ong Boon Beng (USM)
	2. Dr. Noor Fatmawati Mokhtar (USM)
WEBEX LINK :	**(Hall 9)**

	ORAL PRESENTATION 2C [12 Oct 2022, 1015 am – 1215pm]
O-49	**Clinicopathological association of chronic rhinosinusitis with nasal polyp (CRSwNP) and periostin expression** *Sakinah Mohamad, Baharudin Abdullah, Wan Faiziah Wan Abdul Rahman and Najib Majdi Yaacob*
O-50	**Detection of *Herpes simplex* virus-1 by direct immunofluorescence and viral isolation from cerebrospinal fluid** *Ummu Salamah Faisal, Ummu Afeera Zainulabid and Wong Kong Ken*
O-51	**Development of cisplatin-resistant urothelial cancer cells using pulse-shock treatment** *Siti Farizan Mansor, Abhi Veerakumarasivam and Badrul Hisham Yahaya*
O-52	**Biochemical and biophysical characterization of leishmanial histidyl tRNA synthetase** *Fouzia Nasim and Insaf Ahmed Qureshi*
O-53	**Isolation and characterization of ssDNA aptamers against HlyE of *Salmonella Typhi*** *Ahmad Najib Mohamad, Khairul Mohd Fadzli Mustaffa, Eugene Boon Beng Ong, Muhammad Fazli Khalid, Mohd Syafiq Awang, Nor Syafirah Zambry, Asrulnizam Abd Manaf, Yazmin Bustami, Hairul Hisham Hamzah and Ismail Aziah*
O-54	**Development of DNA aptamers for the detection of the *Burkholderia pseudomallei* towards the diagnosis of melioidosis** *Kasturi Selvam, Muhammad Fazli Khalid, Khairul Mohd Fadzli Mustaffa, Azian Harun, Habibah A Wahab and Ismail Aziah*
O-55	**Epigenetic oncogenesis, biomarkers and emerging chemotherapeutics for breast cancer** *Yusuf Oloruntoyin Ayipo, Abdulfatai Temitope Ajiboye, Wahab Adesina Osunniran, Akeem Adebayo Jimoh and Mohd Nizam Mordi*
O-56	**Selection of ssDNA aptamers against Programmed Death -Ligand 1 (PD-L1)** *Muhammad Najmi Mohd Nazri, Khairul Mohd Fadzli Mustaffa and Noor Fatmawati Mokhtar*

O-50

Detection of herpes simplex virus-1 by direct immunofluorescence and viral isolation from cerebrospinal fluid

Ummu Salamah Faisal[1,2*], Ummu Afeera Zainulabid[3,4], Wong Kong Ken[2]

Department of Medical Microbiology, Faculty of Medicine, National Defense University of Malaysia
Department of Microbiology and Immunology, Faculty of Medicine, National University of Malaysia
Deparment of Internal Medicine, Faculty of Medicine, National University of Malaysia Hospital
Department of Internal Medicine, Kulliyyah of Medicine, International Islamic University Malaysia

*Correspondence email: ummusalamahfaisal@gmail.com

Background
Herpes simplex virus (HSV) is the human herpesvirus that leads to herpes simplex encephalitis or meningoencephalitis and is frequently lethal if not treated properly. Here, we described a case of a 21-year-old man who presented with acute confusion and abnormal behaviour and was later diagnosed with HSV-1 meningoencephalitis based on immunofluorescence and viral isolation from cerebrospinal fluid.

Methodology
A lumbar puncture was performed immediately during admission to the ward. Cerebrospinal fluid was also sent for viral culture. The culture was inoculated into human cells in culture (HEp-2) cell monolayers and observed for cytopathogenic effect (CPE). Then the slide was prepared for direct immunofluorescence staining using fluorescein isothiocynate-conjugated HSV type 1 and HSV type 2 antisera. Positive findings would demonstrate cells with fluorescent staining, whereas negative specimens would demonstrate cells with a reddish-brown counterstain.

Results and Discussion
Brain MRI was performed for further evaluation, which showed a focal area of gyral thickening at the left frontoparietal lobes with leptomeningeal enhancement at the left Sylvian fissure, suggestive of meningoencephalitis, and no hydrocephalus was noted. The CSF results revealed 0 polymorphs cells/mm and lymphocyte count, with 0 pus cells. CSF biochemistry showed glucose of 1.67 mg/dl and a very high total protein of 1596 mg/dl. The results of viral culture were obtained on admission day ten. After 10 days of culture with daily CPE observation, CPE evidence of HSV was detected. The prepared slide was observed under the ultraviolet microscope and revealed positive for HSV-1 and negative for HSV-2. HSV-1 has accounted for

more than 90% of all herpes simplex encephalitis cases in adults and children. It spreads by oral contact and primarily results in cold sores, while HSV-2 is sexually transmitted and causes genital herpes.

Conclusion
It has been proven that immunofluorescence antigen detection is a quick, accurate, and sensitive method for distinguishing HSV-1 and HSV-2 antigen in the cerebrospinal fluid of those infected individuals.

UNIVERSITI SAINS MALAYSIA

Thank You