



THE 4TH INTERNATIONAL CONFERENCE ON BIOSCIENCES & MEDICAL ENGINEERING

21- 22 JUNE 2022 VIRTUAL CONFERENCE

SCIENTIFIC ADVANCEMENT
FOR SUSTAINABLE RESOLUTION OF
PANDEMIC

CONFERENCE PROGRAMME BOOK

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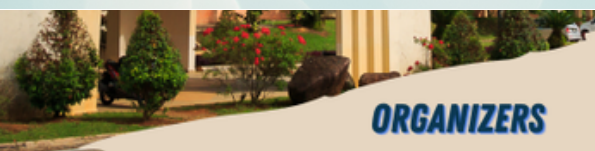
Dr. Suhaili Kamaruddin
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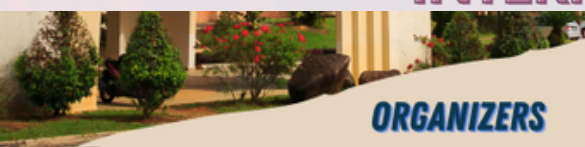


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Unggul, Mandiri, dan Berbudaya

MESSAGE FROM CHAIRMAN



**Assoc. Prof. Dr. Azzmer Azzar
Abdul Hamid**

**Chairman, 4th International
Conference in Biosciences &
Medical Engineering (ICBME)**

Welcome to the 4th International Conference on Biosciences & Medical Engineering (ICBME 2022), organized by Kulliyyah of Science, International Islamic University Malaysia (IIUM), Faculty of Science, Universiti Teknologi Malaysia (UTM) and Udayana University (UNUD), Bali Indonesia. ICBME 2022 virtually held on 21st – 22nd June 2022 under the theme ‘Scientific Advancement for Resolution of Pandemic’ with the support of 8 co-organizing institutions. The organizers aim to promote continuity of science towards developing effective interventions to achieve a sustainable future for all humanity. With 56 Oral and 27 Poster participants, this conference provides a platform for academia and industry to share knowledge and showcase innovations & their achievements in health science and engineering. This event covers multidisciplinary topics on advances in Bioscience and Medical engineering such as applied & general Microbiology, Biochemistry & Molecular Biology, Functional food & Nutraceutical, and Biomechanics & Biomaterials. For the first time, the conference awarded participants and committees in the category of a young scientist, excellent researcher and lifetime contribution. I would like to express my sincere gratitude to the members of the organizing committees for their hard work and continuous support; plus my sincere appreciation to all participants, keynotes, plenary and invited speakers who have contributed to this successful conference.

Last but not least, I would like to thank Universiti Islam Sultan Sharif Ali (UNISSA) Brunei for sponsoring the best presentation and a special award for Sustainable Agriculture. The same goes to ADABI for consistently giving us financial support to manage this jointly organized conference. On behalf of the organizing committee, we are pleased to welcome all participants to the 4th International Conference on Biosciences & Medical Engineering, a virtual meeting. We hope they will find this year’s program exciting and fruitful scientific discussions with local & international participants. Hence, let us enjoy the conference!

MESSAGE FROM CO-CHAIRMAN



Dr. Ida Bagus Wayan Gunam

**Co-Chairman II
4th International Conference in
Biosciences & Medical Engineering
(ICBME)**

On behalf of the International Islamic University Malaysia (IIUM), Faculty of Science Universiti Teknologi Malaysia (UTM) and Faculty of Agricultural Technology, Universitas Udayana (UNUD), I am honored to welcome all the great scientists, academicians, researchers, and students from all over the world to attend the virtual conference of the 4th INTERNATIONAL CONFERENCE ON BIOSCIENCE AND MEDICAL ENGINEERING (ICBME) 2022 from 21-22 June 2022, centered at IIUM, Malaysia.

This conference with the theme: “Scientific Advancement for Sustainable Resolution of Pandemic” serves as a platform for meeting, networking, and discussion on sustainable approaches in bioscience-related disciplines. The scientific event aims to bring together all scientists, academicians, and industries to share knowledge and experiences and showcase innovations and their achievements in bioscience, health science and engineering. The conference will be attended by participants from various countries from various research fields to present their latest scientific findings, which may prove helpful to spur future collaborative efforts. Themes emphasizing collaborative and multidisciplinary research in many scientific areas will expand the boundaries of research while embracing differences and strengths.

On this occasion, I would like to express my sincere gratitude to the UTM and IIUM for trusting the Faculty of Agricultural Technology at Udayana University to participate in this prestigious event. We would also like to extend our sincere thanks to our keynote speakers, plenaries, invited speakers, oral and poster presenters and all participants for contributing to the conference. Furthermore, we would like to express our heartfelt appreciation to all contributing organizations and the conference organizing committees who have worked hard and wholeheartedly to make this conference successful.

Finally, I hope you all enjoy the conference and have a fruitful experience and networking.

Dr. Ida Bagus Wayan Gunam
Co-Chairman II
Department of Agroindustrial Technology
Faculty of Agricultural Technology
Universitas Udayana (UNUD)

KEYNOTE SPEAKERS

ICBME 2022

KEYNOTE SPEAKERS



Dr. Ravindran Thayan
IIUM Adjunct Professor
Head of Virology
Institute for Medical Research (IMR)
National Institute of Health (NIH)
Ministry of Health Malaysia



Dr. I Nengah Sujaya
Faculty of Medicine
School of Public Health
Udayana University (UNUD)



Assoc. Prof. Dr. Takahisa Yamamoto
National Institute of Technology
Gifu College, Japan



PLENARY & INVITED SPEAKERS

ICBME 2022

PLENARY SPEAKERS



Prof. Dr. Shaharum Shamsuddin
Universiti Sains Malaysia



AP. Dr. Zarina Zainuddin
International Islamic University
Malaysia (IIUM)



Prof. Dr. Thomas Edison
E. dela Cruz
University of Santo Tomas
Philippines



Dr. Ahmad Zahran Md. Khudzari
Universiti Teknologi Malaysia
(UTM)



ICBME 2022

INVITED SPEAKERS



Assoc. Prof. Dr. Dasuki Hj Sul'ain
Universiti Sains Malaysia



Assoc. Prof. Dr. Sevgi Marakli
Yildiz Technical University



Assoc. Prof. Dr. Hjh. Rose Abdullah
Universiti Islam Sultan Sharif Ali



Dr. Mohd. Zulkhairi Abdul Rahim
Universiti Kuala Lumpur-MICET



Dr. Khairul Mohd. Fadzli Mustaffa
Institute for Research in Molecular
Medicine (INFORMM), USM



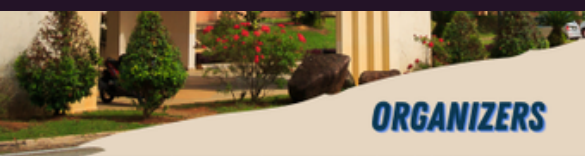
Dr. Siti Azma Jusoh
Universiti Teknologi Mara
(UiTM), Puncak Alam



Dr. Fazia Adyani Ahmad Fuad
International Islamic University
Malaysia (IIUM)



Dr. 'Aishah Mohamed Rehan
Universiti Tun Hussein Onn
Malaysia (UTHM)



PROGRAMME SCHEDULE

DAY I

Schedule
The 4th International Conference on Biosciences & Medical Engineering
21-22 June 2022

TIME (GMT +8 hours)	DAY 1 (21 June 2022)	
08.00-08.30	Registration	
08.30-08.35	Welcoming Address by Master of Ceremony, <i>Dr Widya Abdul Wahab</i>	
08.35-08.40	Recitation of Du'a by <i>Assoc. Prof. Dr. Abdurezak Abdullahi Hashi</i>	
08.40-08.50	Welcoming Speech by Chairman of ICBME2022, <i>Assoc. Prof. Dr. Azzmer Azzar Abdul Hamid</i>	
08.50-09.00	Opening by the Dean of Kuliyah of Science, <i>Assoc. Prof. Dr. Jesni Shamsul Shaari</i>	
09.00-09.30	Keynote I: Dr. Ravindran Thayan (Institute for Medical Research (IMR), National Institute of Health (NIH) Malaysia)	
	Covid-19 Pandemic: Bridging Biosciences and Medical Engineering in Various Facets of Outbreak Management	
09.30-10.00	Keynote II: Assoc. Prof. Dr. Takahisa Yamamoto (Gifu College, Japan)	
	How Computational Fluid Dynamics Simulation Contributes to the Development of Biomedical Engineering	
10.00-10.30	Joint Q & A and Break	
	ROOM A	ROOM B
Concurrent Session 1	Chairperson: Prof. Dr. Fahrul Zaman Huyop (Universiti Teknologi Malaysia)	Chairperson: Prof. Dr. Tengku Haziyaamin (International Islamic University Malaysia)
11.00-11.30	Plenary I: Prof. Dr. Shaharum Shamsuddin (Universiti Sains Malaysia)	Plenary II: Assoc. Prof. Dr. Zarina Zainuddin (International Islamic University Malaysia)
	Molecular Evolution Of SARS-COV-2: From Wuhan to Omicron BA.2	Stevia rebaudiana Improvement Strategies: Sharing A Decade of Experience
11.30-11.45	53AO: DyaFitri Kusharyati	52AO: Nabihah Azhary
	Bacteriocin of Lactic Acid Bacteria LG15 Isolated from Logging Beach Mangrove Sediment and Its Inhibition Against <i>Propionibacterium acnes</i>	The Effect of Biosurfactant on the Interaction of Organic Pollutants with Catabolic Enzymes Through Molecular Docking and Molecular Dynamics Simulation Studies: A Review
11.45-12.00	47AO: Dr. Saefuddin Aziz	50AO: I Gede Putu Supadmanaba
	Detection of Phenylglycine and Pipecolic Acid Biosynthetic Genes Involved in Pristinamycin Production in <i>Streptomyces</i> SW4 by Polymerase Chain Reaction	SF3B1 Expression Predict the Chemoresistance in Triple-Negative Breast Cancer
12.00-12.15	42AO: Siti Aishah Sufira Nor Hishamuddin	48AO: Assoc. Prof. Dr. Desak Made Wihandani
	The Binding Affinity of Spike Cleavage Site with Furin Protease: Insight into Infectivity of Sars-Cov-2 Variants	Relationship Between Serum Level of CD44 With Clinicopathology of Breast Cancer Patient in Bali, Indonesia

PROGRAMME SCHEDULE

DAY I

12.15-12.30	Invited speaker I: Dr. 'Aishah Mohamed Rehan (Universiti Tun Hussein Onn Malaysia) Utilization Of Bioinformatics Tools for Characterizing Carbohydrate-Active Enzymes (CAZYMES) For Biobased Industry	Invited speaker II: AP Dr. Mohd Dasuki Hj Sul'ain (Universiti Sains Malaysia) Anti-Depressant Effects of Melaleuca cajuputi Essential Oil in Chronic Immobilization Stress-Induced Mice
12.30-12.45	41AO: Dr. Ummu Afeera Zainulabid Rapid Identification Of SARS-CoV-2 Lineages from Two Major Clusters in Pahang, Malaysia Using Minion Sequence	45AO: I Wayan Ryantama Swastika Braja Formulation And Stability of Clove Leaf (<i>Syzygium Aromaticum</i> L.) Essential Oil Microemulsion
12.45-13.00	37AO: Rafida Binti Razali Optimization of Recombinant Production and In Silico Screening of Peptide-Based Inhibitors for SARS-CoV-2 Plpro	36AO: Syarifffah Nuratiqah Syed Yaacob Genome Analysis of Lactic Acid Bacteria from Malaysian <i>Heterotrigona itama</i> Honey Reveal Its Source of Novel Lactobacillaceae spp. Capable to Produce B-Group Vitamins
13.00-14.00	Poster Evaluation & Tea Break	Poster Evaluation & Tea Break
Session 2 14.00-14.15	Chairperson: Dr. Nurul Hidayah Samsulrizal (International Islamic University Malaysia)	Chairperson: Dr. Khairul Bariyyah Abd. Halim (International Islamic University Malaysia)
14.15-14.30	35AO: Dr. Cahyo Budiman Inhibitory Properties of Hypotlide of <i>Hyptis Pectinata</i> (L.) Against Proteolytic Subunit of Caseinolytic Protease of <i>Plasmodium knowlesi</i>	34AO: Prof. Dr. drh. I Wayan Suardana, Msi Identification Of Gram-Positive A-Hemolysis Bacteria Isolated from Tonsil and Nasal of Pigs in Traditional Pig Slaughterhouse and Its Antimicrobial Susceptibility Against Penicillin G and Tetracycline
14.30-14.45	33AO: Teo Hwee Li Optimization Of Cellulase and Xylanase Synthesis by <i>Trichoderma harzianum</i> Under Solid-State Fermentation Using Untreated Oil Palm Leaves by Taguchi Orthogonal Design	32AO: Zahidah Nasuha Bt Mohd Yasin Comparison Of Thp-1 Macrophages Viability in Different Types of Culture Vessels
14.45-15.00	27AO: Nurhidayah Binti Ab. Rahim Antioxidant Activity and Lc-Ms Profiling of Leaves Extract of <i>Alstonia angustiloba</i>	29AO: Dr. A.A.S.A. Sukmaningsih K. Effect Of <i>Eucheuma cottoni</i> seaweed Extract on Histopathology of Testes of White Rat (<i>Rattus Norvegicus</i> L.) that Induced by Natrium Nitrite
15.00-15.15	49BO: Dr. Tooba Lateef Wild Oat: A Miraculous Hepatoprotective Herb.	18AO: Dr. Izwan Bharudin Identification of Mating Genes from Oil Palm Pathogen, <i>Ganoderma boninense</i>
15.15-15.30	Invited Speaker III: Dr. Khairul Mohd Fadzli (Universiti Sains Malaysia) EGFP Increases DNA Aptamer Binding Affinity Against CD54 Protein	Invited Speaker IV: Dr. Siti Azma Jusoh Universiti Teknologi Mara Ensemble-Based Docking in Drug Discovery: Progress, Pros & Cons

PROGRAMME SCHEDULE

DAY I

15.30-15.45	43AO: Prof. Dr. Nyoman Semadi Antara Promising Source of Prebiotics from Tropical Plants of Indonesia Origin	46AO: Dr. Dini Ryandini Inhibition Of Pathogenic Bacteria by Antibacterial Compounds Produced by Streptomyces Sp. Sae4034.
15.45-16.00	30AO: Nadhirah Binti Misman De Novo Transcriptome Dataset of Gene Expression in Durio zibethinus During the Infection of Phytophthora Palmivora	44AO: Prof. Dr. Sri Wahjuni Nano Extract of Coriandrum Sativum L (Ketumbar) Decrease Malondialdehyde (Mda), Superoxide Dismutase (Sod) Blood Glucose in STZ-Induced Wistar Rats.
16.00-16.15	39BO: Nanthini Rajindran Analysis Of a Special Product Honey from Sabah	55BO: Ni Made Pertiwi Jaya Application Of Biological Filter on Fish Cultivation in Floating Net Cages for Lake Water Quality Management
16.15-16.30		56BO: Prof. Osmanu Haruna Ahmed Reversing Soil Threat for Production Agriculture
16.30-17.00	Tea Break	
End of day 1		

PROGRAMME SCHEDULE

DAY 2

TIME	DAY 2 (22 June 2022)	
08.30-09.00	Registration	
09.00-09.30	Keynote Speaker III: Dr. I Nengah Sujaya (Udayana University, Indonesia) Post COVID-19 Pandemic Era: The time to Recover Gut Dysbiosis	
09.30-09.45	Q&A and Break	
	ROOM A	ROOM B
Session 3	Chairperson: Prof. Dr. Fahrul Zaman Huyop (Universiti Teknologi Malaysia)	Chairperson: Dr. Syafiqah Saidin (Universiti Teknologi Malaysia)
10.00-10.30	Plenary III: Prof. Dr. Thomas Edison E. dela Cruz (University of Santo Thomas, Philippines) Hidden Partners: Tapping Fungal Associates for Bioactive Metabolites	Plenary IV: Dr. Ahmad Zahran (Universiti Teknologi Malaysia) Physiological Flow as a basis for Medical Device Design
10.30-10.45	15AO: Bilyaminu Garba Jega Antibiotic Resistance of Gram-Negative Bacteria Isolated from Inpatients Department (Ipd) In Federal Medical Center (Fmc) Birnin Kebbi, Nigeria	40CO: Syafie Nizam Preliminary Result: Ai-Generated Neutrophil Image Using Deep Convolution Gan for Data Augmentation
10.45-11.00	17AO: Dr. Sarahani Harun Identifying The Potential Genes in Glucosinolate Biosynthesis Using Pathway Analysis	25CO: Dr. Ridwan Rachmat Characteristics Of Straw Mushroom Cultivated Inside Fibre Reinforce Plastic House with Iot
11.00-11.15	9AO: Lishantini A/P Pearanpan Annexin A1 Modulation in Clinacanthus nutans Treated Breast Cancer Cell Lines	3BO: Nurazira Binti Anuar Nutritional Properties Evaluation of Asian Sea Bass Feed Formulation from Larvae Generated by Fish and Chicken Wastes
11.15-11.30	Invited Speaker V: Dr. Zulkhairi Abdul Rahim (Universiti Kuala Lumpur) Biosensor: A Rapid Approach for Analytical Applications	Invited Speaker VI: Dr. Fazia Adyani Ahmad Fuad (International Islamic University Malaysia) The Glycolytic Pathway as a Target for Drug Discovery Against Tropical Diseases
11.30-11.45	8AO: Isah Musa Antibacterial Activity, UV-Vis Spectrophotometry, and FTIR Analysis of Melaleuca cajuputi Powell Leaves Extract	23BO: Nurul Farhana Roszaini Mechanical Properties of Carbon Fiber for Consumer Product: A Mini Review
11.45-12.00	5AO: Sharifah Siti Maryam Bt Syd Abdul Rahman Bacteria Associated with Rice Grain Discoloration in Penang	22BO: Chong Pu En Properties Of the Transparent Wood for Weathering Resistance

PROGRAMME SCHEDULE

DAY 2

12.00-12.15	2AO: Dr. Yilmaz Kaya Degradation Of Dalapon Herbicide by <i>Rahnella aquatilis</i> Isolated from Root Nodules of Faba Bean	21BO: Aina Ashyiqin Gapor The Synergetic Effect of Fly Ash Concrete Mix for the Application of Sustainable Construction
12.15-12.30	1AO: Nor Wajihan Binti Muda Influence of Microbial Inoculant on The Oviposition and Completion of Life Cycle of <i>Chrysomya megacephala</i> and <i>Chrysomya Rufifacies</i> Infesting Rabbit Carcasses	20BO: I Gede Arya Sujana Selection and Growth Condition Optimization of Ethanol-Producing Microbes Isolated from Ragi Tapai
12.30-12.45	4AO: Aedrianee Reeza Alwi Applications Of X-Chromosome Short Tandem Repeats for Human Identification: A Review	19BO: I Wayan Wisma Pradnyana Putra Isolation, Screening of Cellulolytic Bacteria, Optimization of Cellulase Production and Its Partial Purification
12.45-13.00	31BO: Wan Nurul Syafawani Binti Wan Mohd Taufek Application of Geometric Morphometric (GMM) Approach for Writer Classification Using Handwritten Numeral Characters	16BO: Nurnabilah Binti Ahmad Pandi Callus Induction of <i>Zingiber officinale</i> Var. Bentong Using Different Plant Growth Regulators (Pgrs) And Photoperiod for the Establishment Oof Cell Suspension Culture
13.00-14.00	Poster Evaluation & Tea Break:	Poster Evaluation & Tea Break:
Session 4 14.00-14.15	Chairperson 4A: Dr. Yilmaz Kaya (Ondokuz Mayis University, Turkey)	Chairperson 4B: Prof. Dr. Ahmed Jalal Khan Chowdhury (Universiti Islam Sultan Sharif Ali, Brunei)
14.15-14.30	28BO: Dr. Yohanes Setiyo Application of the Leisa System for Land Health	14BO: Dr. Intan Zarina Zainol Abidin The Effects of <i>Piper sarmentosum</i> Ethyl Acetate Extract on Osteoblast Differentiation of Peripheral Blood Stem Cells
14.30-14.45	11BO: Arik Arubil Fatinah Incidence Of Phytoplasma Diseases in Carrot in Malang Regency, Indonesia	13BO: Nur Syafiqah Abdul Halim Characterization of Pineapple Leaves Paper Using Scanning Electron Microscope (SEM) And Fourier-Transform Infrared Spectroscopy (FTIR): A Review
14.45-15.00	10BO: Dr. Siti Fairuz Che Othman Assessing The Physicochemical Stability of Essential Oil Encapsulated in Hydrogel Beads	12BO: Umi Hartina Mohamad Razali Effects Of Ultrasonic Treatment on Collagen Extraction from The Skins of Barramundi

PROGRAMME SCHEDULE

DAY 2

15.00-15.15	57AO: Dr. Cristalina Jalil Marsal Fish Skin Gelatin and Kappa-Carrageenan Mixtures; An Innovative Approach Towards Rheological Characterization	54BO: Dr. Ir. Halil Hamzah, Mba Developing Drip Irrigation Technology on Dry Land Chili Farming in Rural of North Lombok: Improving Farmers' Households During Pandemic Covid-19 Era
15.15-15.30	Invited Speaker VII: Assoc. Prof. Dr. Sevgi Marakli (Yildiz Technical University, Turkey) The Dark Matter Rises to Identify the Relationship Between Transposon and Mirna in Aegilops Genome	Invited Speaker VIII: Assoc. Prof. Dr. Hajah Rose Abdullah (Universiti Islam Sultan Sharif Ali, Brunei) COIVID-19 Pandemic Implications on Agro-Food Trade Issues and Challenges Towards Food Security in Brunei Darussalam
15.30-15.45	26BO: Qjestiena Aliya Faiezi Binti Faizul Callus And Cell Suspension Culture of Sacha Inchi (Plukenetia Volubilis L.)	58BO: Dr. Mohd Hafiz Jamaludin A Review of Solid-State Fermentation: An Alternative Source of Protein for Aquaculture Feed
15.45-16.00		24BO: Nurzafirah Mohamad Preparation and Characterization of Activated Carbon from Watermelon Peels- A Short Review
16.15-16.45	PRESENTER AND AWARD WINNER: Given by Assoc. Prof. Dr. Azzmer Azzar and Assoc. Prof. Dr. Rose Abdullah (UNISSA)	
16.45-17.00	CLOSING CEREMONY BY CO-CHAIR: Dr. Ida Bagus Wayan Gunam (Udayana University)	
End of the 4th International Conference on Biosciences & Medical Engineering		

POSTER EVALUATION

DAY I

ID	NAME OF ORAL PRESENTER	VIRTUAL VENUE	DAY	BREAKOUTROOM
1	DR. HAZLINA AHAMAD ZAKERI	HALL 1	1	A
2	DR. SHIAMALA DEVI RAMAIYA	HALL 1	1	A
3	DR. ENTESAR YASEEN ABDO QAID	HALL 1	1	A
4	DR. LATIFAH BINTI IBRAHIM	HALL 1	1	A
5	DR. MAIZATUL AKMA IBRAHIM	HALL 1	1	A
6	DR. WAN AHMAD FIRDAUS BIN WAN CHEK	HALL 1	1	A
7	DR. ERNIE ZURAIDA ALI	HALL 1	1	A
8	PROF. SHAHRUL HISHAM ZAINAL ARIFFIN	HALL 1	1	A
9	MR. AMIN ASYRAF TAMIZI	HALL 1	1	B
10	MS. ANIS AFUZA BINTI MD YUSOF	HALL 1	1	B
11	MR. HELMI HUSAINI BIN ZAINAL FITHRI	HALL 1	1	B
12	MS. NI KADEK RATNINGSIH DEWI PARWATI	HALL 1	1	B
14	MS. BALQIS NURUL HUDA BINTI ARMADI	HALL 1	1	B
15	MR. I WAYAN ARDYAN SUDHARTA PUTRA	HALL 1	1	B

POSTER EVALUATION

DAY 2

16	MR. NOVAL WAHYU ADI	HALL 2	2	A
17	MR. I GEDE WIKANIA WIRA WIGUNA	HALL 2	2	A
18	MS. NI NYOMAN SHINTA PRASISTA SARI	HALL 2	2	A
19	MS. MADE VIOLIN WEDA YANI	HALL 2	2	A
20	MR. I GEDE KRISNA ARIM SADEVA	HALL 2	2	A
21	MR. I GEDE ASWIN PARISYA SASMANA	HALL 2	2	A
22	MS. PUTRI AYU WULANDARI	HALL 2	2	B
23	MS. NI PUTU SRI INDRANI REMITHA	HALL 2	2	B
24	MR. ANAK AGUNG BAGUS PUTRA INDRAKUSUMA	HALL 2	2	B
25	MR. I PUTU GEDE SEPTIAWAN SAPUTRA	HALL 2	2	B
26	DR. IDA AYU WIDYA ANJANI	HALL 2	2	B
27	MR. I GUSTI NGURAH ANANDA WIRA KUSUMA	HALL 2	2	B
28	MS. I GUSTI AYU STITI SADVIKA	HALL 2	2	B

KEYNOTE ABSTRACTS

COVID-19 Pandemic: Bridging Biosciences and Medical Engineering in Various Facets of Outbreak Management

Dr Ravindran Thayan

Head of Virology Unit, Institute for Medical Research,
National Institutes of Health, Setia Alam

Severe Acute Respiratory Syndrome Coronavirus 2 is responsible for COVID-19 pandemic. The infection which was first reported in Wuhan Province, China and later spread to other parts of the world, was declared as pandemic by WHO on 11th March 2020. Till date, almost 528 million people were infected and nearly 6.28 million people had died. The virus has been undergoing mutations ever since first reported, due to its ability to continuously causing infections in the community. This results in many variants of the virus such as alpha, beta, delta and omicron. These variants are of public health concern due to their role in increased transmissibility as well severe outcomes. With the advent of technology, both biosciences and bioengineering had combined to provide wide range of solutions to the pandemic, ranging from cutting-edge diagnostics, artificial intelligence in infection control and therapeutics to engineering and telecommunication advances. Among the key ventures of these sciences are breakthrough technology in diagnostics such as use of nanotechnology and biosensor in development of sensitive and specific POCT, devising cost-effective mask or respirators, developing engineering controls for improving ventilation and infection control in hospitals, use of artificial intelligence and machine learning to facilitate rapid development of therapeutics and vaccines as well as predicting outbreaks. There are also advances in telecommunications, where virtual and non-physical communications enabled many interventions progressed during the pandemic. Modelling of aerosol transmission enable better engineering control in the ventilation system and prevented outbreaks due to aerosol transmission. In summary, both biosciences and medical engineering have niche roles in outbreak management as part of preparedness for future pandemic.

KEYNOTE ABSTRACTS

How Computational Fluid Dynamics Simulation Contributes to the Development of Biomedical Engineering

Takahisa Yamamoto, PhD.,

Associate Professor, Dept. Mech. Eng., National Institute of Technology, Gifu College,
Councilor for International Cooperation Affairs Division, Headquarter of National
Institute of Technology

Computer technologies have made remarkable progress according to Moore's law which perception that the number of transistors on a microchip doubles every two years, though the cost of computers is halved. Moore's law states that we can expect the speed and capability of our computers to increase every couple of years, and we will pay less for them. Another tenet of Moore's Law asserts that this growth is exponential. With this development of computers, computational fluid dynamics (CFD) has also made great strides. The first work using computers to model fluid flow, as governed by the Navier-Stokes equations, was performed at Los Alamos National Lab. in the late 1960s, this group developed various numerical methods to simulate transient two-dimensional fluid flows. CFD is nowadays applied to a wide range of research and engineering problems not only in industrial studies but also in biomedical engineering fields; for example, in these years, the dispersal characteristics of the droplets have been numerically analyzed by using CFD in order to find the COVID-19 spread of infection. Such revelations have made a significant contribution to the control of the infection. On the other hand, coupling techniques of CFD with other numerical simulations such as structure (Fluid-Structure Interaction, FSI) analysis has been attracting attention because of the ease with large scale calculations can be performed due to the increasing computer performance. FSI has revealed actual blood flow characteristics in cerebrovascular precisely. The contribution of CFD and the related techniques will continue to contribute to the development of biomedical engineering.

KEYNOTE ABSTRACTS

Post Covid-19 Pandemic Era: The Time To Recover Gut Dysbiosis

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The World Health Organization declared a pandemic of the Coronavirus Disease 2019 (COVID-19) outbreak caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) on March 11, 2020. The SARS-CoV-2 has infected more than 150 million people and caused over three million deaths as of May 2021. Respiratory illnesses including severe respiratory syndrome caused by the SARS-CoV-2 infection indicate the virus infects respiratory epithelial cells, where the angiotensin-converting enzyme (ACE) 2 acts as a viral receptor for the entry process. The ACE2 is highly expressed in the lung and intestinal tract, implying that a gastrointestinal tract is an extrapulmonary place for viral proliferation. This was also supported by the evidence that SARS-CoV-2 RNA was detected in stool specimens associated with gastrointestinal symptoms of the infected person. SARS-CoV-2 infection alters gut microbiota that is indicated by reduced diversity of gut microbiota, enrichment of pathogenic bacteria, and depletion of the beneficial symbiont. Depletion of beneficial symbiont and gut dysbiosis persisted even after clearance of SARS-CoV-2 that need to be recovered through gut microbiota target approaches. The introduction of probiotics as bacterial therapy either supplemented with prebiotic and or colonic foods offers a great opportunity. Few clinical trials in the modulation of gut dysbiosis using probiotics have been conducted with promising results, however comprehensive proven concepts will be further completed soon. In addition, the dietary approaches especially the consumption-specific available foods which enrich diverse gut microbiota provide a rational option in fastening the recovery of gut dysbiosis due to SARS-CoV-2 infection.

Keywords: 1, SARS-CoV-2 2, Gut microbiota 3 Dysbiosis 4, Probiotic

BACTERIA ASSOCIATED WITH RICE GRAIN DISCOLOURATION IN PENANG

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Abstract: Rice panicle blight and grain discoloration condition is a newly paddy disease that firstly discovered from China in 2020 and recently discovered in Malaysia with adverse impact on our granary production. The symptoms first appeared on the glumes as light-brown spots that progressed to darker brown or black spots, dotted spots that varied in shape and size, hollow light weight panicles, or even unfilled grains. Therefore, the objective of this research was to study the bacteria associated from rice panicle blight and grain discolouration by identifying the causal pathogen based on their phenotypic and molecular characterization. Sampling was done in naturally infected granary areas and the collected panicles have been performed throughout surface sterilization for bacteria isolation until obtained single pure colony. 11 representatives of pure isolates obtained have been identified and classified through phenotypic and molecular characteristics. Based from that, 4 genera of bacteria were obtained. They were from *Pseudomonas* sp., *Pantoea* sp., *Enterobacter* sp. and *Paenibacillus* sp. Hence, to alleviate this serious disease, a precise identification of the pathogen is required in order to control the disease from spreading which results in a rice grain yield reduction.

Keywords: Bacteria, Pathogen, Rice panicle blight, Grain discolouration, Penang

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Ida Bagus Wayan Gunam, Ph.D. was born in Karangasem Bali, April 24, 1963. He obtained a bachelor's degree at Bogor Agricultural University (IPB) in Food Technology and Nutrition in 1986. Prior to being accepted as a lecturer at the Faculty of Agricultural Technology, Udayana University, he was as a Production Manager at PT. Wihadi Jaya for 2 years. In 1997, he completed his Master Degree in the field of Food Science and Technology at the Postgraduate Program at Gadjah Mada University (UGM) Yogyakarta. He continued his study at the PhD level at the Graduate School of Agriculture, Faculty of Agriculture, Hokkaido University Sapporo Japan and graduated in 2006 in the field of applied bioscience. Since 1989 until now he works as a lecturer at the Department of Agricultural Industrial Technology, Faculty of Agricultural Technology, Udayana University. His main research is applied microbiology on energy, beverage, and fermentation technology. Currently, he has published more than 120 scientific writings, in the form of journals, proceedings, chapter in books, and books. Aside from teaching and supervising student at the level of undergraduate, master, and PhD in his own specialty. During his career, he served as chairman of the Department of Agroindustrial Technology, Secretary for Research at the Institute for Research and Community Service at Udayana University (2010-2014). Secretary of the Udayana University Quality Assurance Institute (2014-2017). Head of the Bioindustry and Environment Laboratory (2018-2021). Secretary of the Indonesian Climate Change & Forestry Association (APIKI) Bali Sub-Region (2013-2021). Besides that, he is also active as a consultant in the field of agricultural industrial technology.

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