Universiti Brunei Darussalam

Snibe Diagnostic

Under the auspices of:

ifcc International Federation of Clinical Chemistry and Laboratory Medicine

RTCT Diagnostics

In conjunction with:

BRUNEI MYCE 2026 MID-YEAR CONFERENCE AND EXHIBITION

UBD-SNIBE SYMPOSIUM 2026

Advances in Clinical Chemistry & Immunoassay Technologies

20 – 21 JUNE

PRO-CHANCELLOR
ARTS CENTRE

Universiti Brunei Darussalam

PROGRAMME BOOKLET

WELCOME ADDRESS

Dr. Suwarni binti Hj Md Diah
Chairperson of the UBD-Snibe Symposium 2026
Deputy Dean (Research, Innovation & Sustainability)
PAPRSB Institute of Health Sciences
Universiti Brunei Darussalam

It is my great pleasure, on behalf of the organising committee, to warmly welcome all delegates, speakers, distinguished guests, industry partners, and participants to the 1st UBD-Snibe Symposium to be held in Universiti Brunei Darussalam, Brunei Darussalam. This symposium represents a significant milestone in fostering academic-industry collaboration in the field of laboratory medicine and diagnostic innovation. Jointly organised by the PAPRSB Institute of Health Sciences, UBD and Snibe, in strategic partnership with RTCT Diagnostics, the symposium reflects our shared commitment to advancing scientific knowledge, professional development, and healthcare excellence.

The theme, "*Advances in Clinical Chemistry & Immunoassay Technologies*," highlights the increasingly critical role of diagnostics in modern healthcare systems. As healthcare challenges continue to evolve globally, particularly in the areas of non-communicable diseases, precision medicine, and quality-driven healthcare delivery, advancements in diagnostic technologies have become essential in supporting timely clinical decision-making, improving patient outcomes, and strengthening healthcare sustainability.

This symposium provides an important platform for researchers, clinicians, laboratory professionals, policymakers, educators, and industry experts to exchange ideas, share emerging scientific developments, and explore collaborative opportunities. It is hoped that participants will gain valuable insights into the current innovations in immunoassay technologies, laboratory automation, biomarker discovery, and diagnostic applications relevant to both regional and international healthcare contexts.

We are especially honoured to welcome our distinguished international speakers and experts, whose contributions and experiences greatly enrich the scientific and professional value of this symposium. Their participation reflects the growing importance of global collaboration in addressing healthcare challenges and building resilient laboratory systems for the future. I would also like to extend my sincere appreciation to all members of the UBD and Snibe organising committee, collaborators, sponsors, volunteers, and supporting institutions whose dedication and hard work have made this event possible. Their commitment exemplifies the spirit of partnership and excellence that underpins this symposium.

I encourage all participants to actively engage in discussions, build meaningful professional networks, and embrace the opportunities for learning and collaboration that this symposium offers. It is our hope that the connections established here will continue beyond this event and contribute meaningfully to the advancement of healthcare, diagnostics, research, and education. Thank you for your participation and support. I wish all delegates a productive, enriching, and successful symposium experience.

FOREWORD

Ms. Lucy Liu
Co-chairperson of the UBD-Snibe Symposium 2026
Vice President of International Business
Shenzhen New Industries Biomedical Engineering Co., Ltd.

It is our great honour to introduce the official programme for the UBD-Snibe Symposium 2026, jointly convened by Universiti Brunei Darussalam and Snibe. Hosted in Brunei, a hub of cross-regional medical collaboration in Southeast Asia, this symposium creates a premium platform for global clinicians, academic researchers, laboratory specialists and industrial professionals to share frontier insights, exchange clinical experience and explore innovative diagnostic solutions.

For decades, Snibe has remained a global pioneer in in-vitro diagnostics, with a fully integrated R&D ecosystem covering instruments, reagents and core raw materials. Our high-precision diagnostic systems serve over 160 countries worldwide, with proven market performance across key regions globally. Rooted in long-term industry-university partnership, Snibe and UBD signed a strategic Memorandum of Understanding in January 2025, laying a solid foundation for academic exchange, talent cultivation and clinical transformation.

This upcoming symposium will feature a comprehensive scientific programme covering core frontier areas within laboratory medicine, with a focus on cutting-edge diagnostic innovation, technological advancement and practical clinical application. It will showcase our latest R&D achievements and global best practices, aligned with our long-standing "*start new innovation, be excellent*" philosophy and global academic initiative Snibe Day, to foster cross-border knowledge sharing and industry-wide advancement.

We sincerely welcome all participants to engage in in-depth dialogue, build academic consensus and forge long-term partnerships. Together, we aim to elevate regional laboratory medicine standards and advance public health across Southeast Asia.

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ABOUT THE SYMPOSIUM

PAPRSB Institute of Health Sciences (IHS), Universiti Brunei Darussalam (UBD), in co-hosting with Snibe (Shenzhen New Industries Biomedical Engineering Co. Ltd), is proud to present the UBD–Snibe Symposium 2026, with the theme *Advances in Clinical Chemistry & Immunoassay Technologies*. Organised in collaboration with RTCT Diagnostics, the symposium reflects a shared commitment to advancing diagnostic science and strengthening healthcare systems.

The symposium stems from the official visit by the Vice-Chancellor of UBD, Dr. Hazri bin Haji Kifle, to Snibe headquarters in Shenzhen, China, in January 2025, which opened opportunities for academic–industry collaboration in diagnostics and laboratory medicine. It is conceived as a platform for international knowledge exchange and national capacity building, and marks the first Snibe scientific symposium hosted in Brunei. Anchored at UBD, the event provides a neutral academic space for engagement among researchers, clinicians, laboratory professionals, policymakers, and industry experts.

PAPRSB IHS is well-positioned to co-host this symposium, given its role in health sciences education and biomedical research. As the academic lead, PAPRSB IHS provides intellectual direction and contextualisation of discussions relevant to Brunei, while Snibe contributes global expertise and advancements in diagnostic technologies, ensuring a balanced and educational programme for the symposium.

Framed around the theme Advances in Clinical Chemistry & Immunoassay Technologies, the symposium highlights the critical role of diagnostics in modern healthcare, particularly in addressing non-communicable diseases and supporting quality-driven care. It also underscores UBD's commitment to integrating scientific innovation with education and clinical relevance.

The symposium is expected to enhance understanding of diagnostic innovations, strengthen academic–industry collaboration, and support capacity building within Brunei's laboratory workforce, while laying the foundation for future collaborations in research, training, and professional development.

AGENDA

PLENARY SESSIONS

PANEL DISCUSSION

SNIBE TECHNOLOGY SPOTLIGHT

POSTER PITCH SESSION

The UBD-Snibe Symposium 2026 brings together clinicians, laboratory scientists, researchers, and industry experts to explore advances in diagnostic medicine and laboratory practice. Over two days, the programme features a keynote and three plenary sessions on immunoassay technologies, infectious disease testing, non-communicable disease (NCD) diagnostics, laboratory quality, workforce development, and healthcare innovation, complemented by a panel discussion, a technology showcase, poster presentations, networking opportunities, and knowledge exchange among regional and international participants.

PROGRAMME SCHEDULE

20 June 2026

Day 1

Scientific Foundations and Clinical Translation

08:00	Registration
08:45	Arrival of invited guests

Opening Ceremony

09:00	**Arrival of the Guest of Honour** Yang Mulia Dr. Hazri bin Haji Kifle Vice-Chancellor Universiti Brunei Darussalam
	Welcoming Speech Dr. Suwarni binti Haji Mohd Diah Chair, UBD-Snibe Symposium 2026 Deputy Dean (Research, Innovation, and Sustainability) PAPRSB Institute of Health Sciences Universiti Brunei Darussalam
	Opening Remarks Ms. Lucy Liu Co-Chair, UBD-Snibe Symposium 2026 Vice President of International Business Snibe (Shenzhen New Industries Biomedical Engineering Co., Ltd.)
	Officiation of the symposium by the Guest of Honour
	Cultural performance by UBD Dance Culture Club
	Photo session
09:55	**Keynote Address: Interferences in Immunoassay Analysis** Associate Professor Murat Cİhan Türkiye
	Presentation of token of appreciation
10:30	Coffee break

PROGRAMME SCHEDULE

20 June 2026

Plenary 1 | Immunoassay Technologies and Laboratory Automation

Moderator: Pg Dr. Hajah Nurolaini Pg Haji Muhd Kifli

11:00	Introduction
11:05	**Centralized Infectious Disease Testing: Clinical Value & Public Health Impact** Professor Lorenzo Drago Italy
11:25	**Strengthening STD Screening Programs: Comprehensive Evaluation of High-Throughput Immunoassays for HIV Detection** Professor Gheyath K. Nasrallah Qatar
11:45	Discussion and Q&A
12:05	Presentation of tokens of appreciation
12:15	Networking lunch, poster viewing, and exhibition

Panel Discussion

13:30	**Translating Diagnostic Innovation into Clinical Impact** *Moderator:* Dr. Hajah Surita binti Haji Mohamad Taib *Panellists:* Associate Professor Murat Cİhan, Professor Lorenzo Drago, Professor Gheyath K. Nasrallah, and Dr. Leslie Lam
14:30	Coffee break

Snibe Technology Spotlight

14:45	**Beyond Automation Towards Excellence** Janice Ong Joe Hui *Product Manager* *Snibe Diagnostic*
16:00	End of Day 1

PROGRAMME SCHEDULE

21 June 2026

Day 2

Diagnostics in Practice, Workforce, and Innovation

08:30	Registration, morning refreshment, and arrival of participants

Plenary 2 | Diagnostics for Non-Communicable Diseases: From Screening to Monitoring

Moderator: Dr. Mei Ann Lim

09:00	Introduction
09:05	**Beyond Reference Intervals: Interpreting Laboratory Results in Pediatric Care** Dr. Leslie Lam Singapore
09:25	**Biomarkers in Practice: Bridging Evidence and Application in Brunei's NCD Landscape** Dr. Fung En Ching Brunei Darussalam
09:45	**Cellular Immune Profiling as a Biomarker Platform for Monitoring Treatment Response** Dr. Hjh Hanisah Hj Awg Sharif Brunei Darussalam
10:05	Discussion and Q&A
10:25	Presentation of tokens of appreciation
10:30	Coffee break

Plenary 3 | Laboratory Quality, Standards and Workforce Development

Moderator: Dr. Mas Rina Wati binti Hj Abdul Hamid

10:45	Introduction
10:50	**POCT Quality & Patient Safety: Building a National Framework That Puts Patients First** Dayang Susylawati Binti Haji Magon Brunei Darussalam
11:10	**Advancing Laboratory Quality Systems and Workforce Development through Accreditation and Continuous Improvement** Dayang Nur Nisrinah Binti Awang Haji Yussof Brunei Darussalam
11:30	Discussion and Q&A
11:50	Presentation of tokens of appreciation
12:00	Networking lunch, poster viewing, and exhibition

PROGRAMME SCHEDULE

21 June 2026

Poster Pitch Session

13:00

Phytochemical Profiling and Biological Properties of Local *Nephrolepis biserrata* and *Leea indica* Root Extracts
Ampuan Mohamad Jalalludin bin Ampuan Ali
Brunei Darussalam

Phytochemical Profiling and Anti-urolithiatic Potential of *Morus alba Linn* Leaf Extracts: An in vitro Study
Amira Asyiqin binti Abdul Wahab
Brunei Darussalam

Cytotoxicity of Local *Nephrolepis biserrata* and *Rhodomyrtus tomentosa* Leaf Extracts: Effects of Extraction and Solvent Systems against Breast and Colorectal Cancer Cells
Muhamad Norna Beel Syafiq Zulkefli
Brunei Darussalam

Phytochemical Profiling, Antioxidant Capacity, and Cytotoxicity of *Leea indica* and *Cosmos caudatus*: A Comparison of Extraction Methods and Solvents
Amal Ummi Naqibah binti Md. Zain
Brunei Darussalam

Green Synthesis of Silver Nanoparticles Using Aqueous Plant Extracts and their Anticancer Activity against Colorectal Cancer: A Systematic Review
Nurul Ashifah binti Shafie
Brunei Darussalam

Potential of Green Synthesis of Silver and Gold Nanoparticles for the Management of Metabolic Associated Steatotic Liver Disease
Dr. Mei Ann Lim
Brunei Darussalam

Green-Synthesised *Clinacanthus nutans* derived Silver Nanoparticles Attenuate Hepatic Steatosis through Modulation of Lipid Metabolism and Chaperone-Mediated Autophagy in HepG2 Cells
Atiqah Suhaili
Brunei Darussalam

Mitochondrial Dysfunction Drives Adaptive Glucose-Supported Metabolism Associated with Oxidative Stress
Nur Izzah binti Bungsu
Brunei Darussalam

Beyond Prediction-Stage Supervision: Disease-Semantic Guided Representation Learning for Chest X-Ray Disease Detection
Dr. Wong Wei Kitt
Malaysia

15:00 Coffee break

PROGRAMME SCHEDULE

21 June 2026

Prize Presentation and Closing Ceremony

15:15

Announcement of Poster Prize Winners and Prize Presentation
Dr. Suwarni binti Haji Mohd Diah
Chair, UBD-Snibe Symposium 2026
Deputy Dean (Research, Innovation, and Sustainability)
PAPRSB Institute of Health Sciences
Universiti Brunei Darussalam

Closing Remarks
Dr. Muhammad Hazim bin Haji Abdul Ghani
Co-Chair, UBD-Snibe Symposium 2026
Programme Leader (BHSc Biomedical Science)
PAPRSB Institute of Health Sciences
Universiti Brunei Darussalam

Photo session

End of programme

Prayer times and venue

Venue: Ground floor, Pro-Chancellor Arts Centre

	Subuh	Sunrise	Zohor	Asar	Maghrib	Isyak
20 June	04:45	06:10	12:23	15:49	18:34	19:50
21 June	04:45	06:10	12:23	15:49	18:34	19:50

Source: Ministry of Religious Affairs, Brunei Darussalam

LIST OF SPEAKERS

KEYNOTE & PANEL

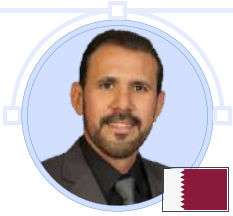
Associate Prof. Murat Cihan

Head of Department of Medical Biochemistry, Faculty of Medicine, Haliç University, Türkiye
Medical Director of Memorial Laboratories, Memorial Health Group, Türkiye

PLENARY & PANEL

Prof. Lorenzo Drago

Professor of General and Clinical Microbiology, University of Milan, Italy
Director at the Department of Laboratory Medicine and the UOC General Clinical Laboratory with Specialist Areas, IRCCS MultiMedica, Italy



PLENARY & PANEL

Prof. Gheyath K. Nasrallah

Professor of Biomedical Science and Head of Research at the College of Health Sciences, Qatar University, Qatar

PLENARY

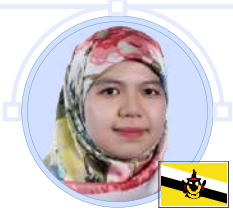
Dr. Leslie Lam

Deputy Medical Director & Consultant Pathologist
Parkway Laboratory Services, Singapore

PLENARY

Dr. Fung En Ching

Consultant Chemical Pathologist, Ministry of Health, Brunei



PLENARY

Dr. Hajah Hanisah Haji Awg Sharif

Lecturer, PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam, Brunei

PLENARY

Dayang Susylawati Haji Magon

Scientific Officer, Point-of-Care Testing Section, Department of Laboratory Services, Ministry of Health, Brunei

PLENARY

Dayang Nur Nisrinah Awang Haji Yussof

Chief Scientific Officer and Quality Manager, Department of Scientific Services, Ministry of Health, Brunei

LIST OF MODERATORS

PLENARY

Pg Dr. Hajah Nurolaini Pg Haji Muhd Kifli

Deputy Dean (Academic and Student Affairs), PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam

PANEL

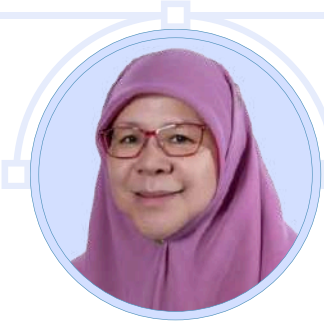
Dr. Hajah Surita Haji Mohamad Taib

President of Brunei Darussalam Association of Medical Laboratory Scientists (BAMLS)

PLENARY

Dr. Mei Ann Lim

Lecturer, PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam



PLENARY

Dr. Mas Rina Wati Haji Abdul Hamid

Associate Professor, PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam

KEYNOTE ADDRESS

Associate Professor Murat Cihan (Türkiye)

Head of Department of Medical Biochemistry, Faculty of Medicine, Haliç University

Medical Director of Memorial Laboratories, Memorial Health Group

INTERFERENCES IN IMMUNOASSAY ANALYSIS

June 20
09:55 am

ABOUT SPEAKER

Assoc. Prof. Dr. Murat Cihan, is a consultant medical biochemist, the Medical Director of Memorial Laboratories, and the Head of the Department of Medical Biochemistry at F. J aculty of Medicine, Haliç University, Türkiye. With over two decades of experience in laboratory medicine, quality management, and clinical diagnostics, his research spans biomarker discovery, laboratory harmonisation, pre-analytical quality, and point-of-care testing. He has authored numerous peer-reviewed publications and actively contributes to international professional organisations, including the European Federation of Clinical Chemistry and Laboratory Medicine (EFLM).

ABSTRACT

Immunoassays are essential in laboratory medicine but remain vulnerable to interferences that can produce misleading results and compromise patient care. This presentation reviews major endogenous and exogenous sources of interference, including heterophile antibodies, autoantibodies, paraproteins, biotin supplementation, therapeutic antibodies, and sample-related factors such as hemolysis, lipemia, and icterus. Analytical challenges including hook effects, cross-reactivity, and matrix effects are also discussed. Practical approaches for detecting and managing interference, including dilution studies, alternative-platform testing, and heterophile-blocking strategies, will be presented. Case-based examples and a diagnostic algorithm will highlight methods to improve diagnostic accuracy and patient safety.

PLENARY SESSION 1

ADVANCES IN IMMUNOASSAY TECHNOLOGIES AND LABORATORY AUTOMATION

SPEAKER 1

Prof. Lorenzo Drago (Italy)

Director at the Department of Laboratory Medicine and the UOC General Clinical Laboratory with Specialist Areas, IRCCS MultiMedica, Milan

CENTRALIZED INFECTIOUS DISEASE TESTING: CLINICAL VALUE AND PUBLIC HEALTH IMPACT

June 20
11:05 am

ABOUT SPEAKER

Professor Lorenzo Drago is Associate Professor of Clinical Microbiology at the University of Milan and Director of the Department of Laboratory Medicine and General Clinical Laboratory at IRCCS MultiMedica. A specialist in microbiology and virology, his research focuses on antimicrobial resistance, biofilms, host–pathogen interactions, microbiome science, and innovative diagnostic technologies. He has authored more than 500 scientific publications, achieved an H-index of 55, and received over 10,000 citations. Professor Drago has led numerous international research projects, holds several patents, and has served in leadership roles within major microbiology and orthopaedic infection societies worldwide.

ABSTRACT

Centralized infectious disease testing remains a critical pillar of modern laboratory medicine, supporting both patient care and public health preparedness. The COVID-19 pandemic, emerging outbreaks such as mpox, and the ongoing burden of infections including HIV, hepatitis, and tuberculosis have highlighted the need for reliable, scalable diagnostic systems. Central laboratories provide standardized workflows, high analytical accuracy, robust quality assurance, and the capacity to process large volumes of samples across diverse infectious disease panels. Automated platforms enhance efficiency, reduce manual intervention, and support consistent turnaround times while ensuring traceability, quality control, and integration with laboratory information systems. Although centralized testing requires substantial investment, it can achieve lower costs per test at scale and support surveillance, outbreak management, and antimicrobial stewardship. Future diagnostic strategies should integrate centralized laboratories, point-of-care testing, digital reporting, and public health surveillance to create sustainable, responsive ecosystems that improve healthcare outcomes and strengthen outbreak preparedness.

PLENARY SESSION 1

ADVANCES IN IMMUNOASSAY TECHNOLOGIES AND LABORATORY AUTOMATION

SPEAKER 2

Prof. Gheyath K. Nasrallah (Qatar)

Professor of Biomedical Science and Head of Research at the College of Health Sciences, QU Health, Qatar University

STRENGTHENING STD SCREENING PROGRAMS: COMPREHENSIVE EVALUATION OF HIGH-THROUGHPUT IMMUNOASSAYS FOR HIV DETECTION

June 20
11:25 am

ABOUT SPEAKER

Prof. Gheyath K. Nasrallah is Professor of Biomedical Science and Head of Research at the College of Health Sciences, QU Health, Qatar University. He is an internationally recognised expert in infectious diseases, serology, clinical diagnostics, and laboratory medicine. He leads a highly productive translational research programme focused on biomarker discovery, assay development, and point-of-care diagnostics. Prof. Gheyath has authored more than 260 scientific publications, garnered over 20, 000 citations, and is ranked among Clarivate's Top 1% Highly Cited Researchers. Prof. Nasrallah is also the founder of RapidDx Diagnostics and InviCure Cosmetics, translating biomedical innovations into impactful healthcare and commercial solutions.

ABSTRACT

Accurate HIV screening in high-throughput, low-prevalence settings is challenged by false-reactive results, substantially increasing repeat testing, confirmatory workload, cost, and patient anxiety. In Qatar's Medical Commission workflow, the fourth-generation ARCHITECT HIV Ag/Ab Combo assay excellent reproducibility, but its positive predictive value was only 31.8% against INNO-LIA and 26.8% against HIV-1 PCR, highlighting the need for more specific alternatives. We evaluated MAGLUMI and VITROS HIV Combo assays using an enriched archived panel of 240 serum samples. Against INNO-LIA, MAGLUMI demonstrated 100% specificity and 100% PPV, whereas VITROS showed 95.8% specificity and 88.1% PPV. Against HIV-1 PCR within the ARCHITECT-reactive subset, MAGLUMI showed 90.9% specificity and 89.7% PPV, whereas VITROS showed 73.2% specificity and 76.1% PPV. Importantly, no single comparator behaved as a perfect reference: 28 samples were INNO-LIA indeterminate, 4 confirmed seropositive cases were PCR negative due to controlled viremia, and 2 acute HIV cases were INNO-LIA indeterminate but PCR positive, consistent with early seroconversion. Overall, MAGLUMI may reduce false reactive results and improve HIV screening efficiency while maintaining accurate detection of true HIV infection.

PLENARY SESSION 2

DIAGNOSTICS FOR NON-COMMUNICABLE DISEASES: FROM SCREENING TO MONITORING

SPEAKER 1

Dr. Leslie Lam (Singapore)

Consultant Chemical Pathologist and Deputy Medical Director, Parkway Laboratory Services, Singapore

President, Singapore Association of Clinical Biochemists (SACB)

BEYOND REFERENCE INTERVALS: INTERPRETING LABORATORY RESULTS IN PEDIATRIC CARE

June 21
09:05 am

ABOUT SPEAKER

Dr. Leslie Lam graduated from The University of Melbourne, Australia and is a qualified Chemical Pathologist. He is a Fellow of The Royal College of Pathologists (FRCPath), Diplomate of the American Board of Clinical Chemistry (DABCC), Fellow of the Association for Diagnostics & Laboratory Medicine Academy (FADLM), Member of the Australasian Association of Clinical Biochemists (MAACB), and Fellow of the Academy of Medicine, Singapore (FAMS).

Dr. Lam was previously the founding Head and Senior Consultant of the Department of Laboratory Medicine, Ng Teng Fong General Hospital. He currently holds multiple portfolios, including President of the Singapore Association of Clinical Biochemists (SACB), member of the Ministry of Health Pathology Specialist Training Committee, and member of the Panel of Advisors for the Health Sciences Authority External Quality Assessment Programme in Clinical Chemistry. Dr. Lam's interests include laboratory management and quality assurance. He has extensive experience guiding laboratories toward accreditation, including the College of American Pathologists (CAP) and ISO 15189. He is a frequent invited speaker and has published widely.

ABSTRACT

Laboratory test interpretation in children presents unique challenges that extend beyond the application of conventional reference intervals. Physiological changes associated with growth and development result in dynamic variations in biochemical and hematological markers throughout childhood. This presentation will discuss key principles in pediatric laboratory medicine, including age- and sex-specific reference intervals, developmental physiology, and common pitfalls in interpretation. Through selected clinical case studies, the session will demonstrate how laboratory professionals and clinicians can derive meaningful clinical insights that support accurate diagnosis and patient management in pediatric care.

PLENARY SESSION 2

DIAGNOSTICS FOR NON-COMMUNICABLE DISEASES: FROM SCREENING TO MONITORING

SPEAKER 2

Dr. Fung En Ching (Brunei Darussalam)

Consultant Chemical Pathologist, Ministry of Health, Brunei

BIOMARKERS IN PRACTICE: BRIDGING EVIDENCE AND APPLICATION IN BRUNEI'S NCD LANDSCAPE

June 21
09:25 am

ABOUT SPEAKER

Dr. Fung En Ching is Consultant Chemical Pathologist at RIPAS Hospital and consultant to the National Clinical Chemistry Reference Laboratory (NCCRL). He graduated in medicine from the University of Bristol in 1998, obtained Membership of the Royal College of Physicians (MRCP UK) in 2005, completed Royal College of Pathologists Fellowship training at St Thomas' Hospital, London, in 2012, and holds an MSc in Clinical Biochemistry from King's College London. His interests include inborn metabolic disease, laboratory utilisation, serum protein electrophoresis with immunotyping, and the use of laboratory data to support clinical decision-making. He advises clinicians and laboratory teams on complex diagnostic, analytical, and technical issues, with a focus on evidence-based laboratory practice. Dr. Fung has lectured in clinical chemistry at PAPRSB Institute of Health Sciences, UBD, contributed to laboratory-data audits, co-authored a book chapter on circulating microRNAs in cardiovascular disease (Advances in Clinical Chemistry, 2019), and serves on the nationwide Point-of-Care Testing Committee for clinical chemistry.

ABSTRACT

Non-communicable diseases (NCDs) account for most premature mortality in Brunei. The clinical chemistry tests used for their screening, diagnosis, and monitoring continueto grow in number, with new biomarkers arriving faster than the evidence behind them. This plenary considers how a clinical chemistry biomarker matures from early candidate to routine clinical use, drawing on a working framework to weigh the evidence behind any new test. Selected tumour biomarkers illustrate the gap between proposed and validated clinical indications. Attention is given to assay characteristics that shape how a diagnostic result should be read, alongside brief observations from local laboratory data on the practice of routine monitoring. The session closes with a short reflection on three working questions: how to judge the applicability of a new assay to local practice, where established assays may have under-recognised uses, and which areas of ongoing research seem worth following.

PLENARY SESSION 2

DIAGNOSTICS FOR NON-COMMUNICABLE DISEASES: FROM SCREENING TO MONITORING

SPEAKER 3

Dr. Hajah Hanisah Haji Awg Sharif (Brunei Darussalam)

Lecturer, PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam

CELLULAR IMMUNE PROFILING AS A BIOMARKER FOR MONITORING TREATMENT RESPONSE

June 21
09:45 am

ABOUT SPEAKER

Dr. Hanisah Sharif is a lecturer and researcher at the PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam. She holds a PhD in Allergy and Clinical Immunology from Imperial College London. Her research interests in respiratory allergies focus on how disease-modifying treatments, including allergen-specific immunotherapy and novel therapies, induce tolerance in allergic individuals. Her current projects investigate the prevalence of allergies and diagnostic approaches in Brunei. She is also interested in the potential of natural remedies and aims to contribute to evidence-based improvements in clinical care.

ABSTRACT

Allergen immunotherapy (AIT) is the only disease-modifying treatment for IgE-mediated allergic diseases. However, monitoring of treatment response remains limited to clinical symptoms and conventional serological markers such as IgE and IgG_4. There is an unmet need for objective, quantitative, and mechanistically informative biomarkers to assess therapeutic efficacy. This talk highlights the use of peripheral blood mononuclear cell (PBMC) profiling by multiparameter flow cytometry as a cellular immunoassay platform for monitoring immune responses following AIT. AIT induces a coordinated immune shift from a pro-allergic effector state to a regulatory state. This is characterized by the suppression of T helper 2 and IL-4^+/IL-21^+ T follicular helper cell responses, and the induction of regulatory T cells, follicular regulatory T cells, and IL-10-producing regulatory B cells.

These dynamic changes define a composite immune signature that can be translated into candidate biomarker panels, including effector-regulatory ratios, to enable objective and longitudinal monitoring of treatment response. These studies highlight the importance of cellular immune profiling as a key approach for future evaluation within the Brunei healthcare setting, with the potential to support the development of precision immune monitoring in noncommunicable diseases.

PLENARY SESSION 3

LABORATORY QUALITY, STANDARDS, AND WORKFORCE DEVELOPMENT

SPEAKER 1

Dayang Susylawati Haji Magon (Brunei Darussalam)

Scientific Officer, Point-of-Care Testing Section, Department of Laboratory Services, Ministry of Health, Brunei

POCT QUALITY & PATIENT SAFETY: BUILDING A NATIONAL FRAMEWORK THAT PUTS PATIENTS FIRST

June 21
10:50 am

ABOUT SPEAKER

Dayang Susylawati Hj Magon is a senior laboratory professional with over 25 years of experience in clinical microbiology and more than seven years leading Point-of-Care Testing (POCT) services within the Ministry of Health, Brunei Darussalam. She holds an MSc in Clinical Microbiology from the University of Nottingham and a BSc (Hons) in Biomedical Science from the University of Bradford. Her expertise spans ISO 15189 accreditation, laboratory quality management, and clinical workflow optimisation, with a sustained commitment to improving patient care outcomes through evidence-based POCT governance.

ABSTRACT

Point-of-care testing (POCT) is revolutionising modern healthcare, delivering rapid, actionable diagnostic results at the patient's side and empowering clinicians to make faster, better-informed decisions. Realizing this potential, however, demands a robust, accountable quality system built around patient safety.

The Department of Laboratory Services, Ministry of Health, Brunei Darussalam, has done exactly that. Through the development of a nationally governed POCT Quality Management System aligned with ISO 15189, Brunei has established a standard in POCT delivery that encompasses rigorous management accountability, quality control, and continual improvement, and a structured operator competency programme that ensures only qualified personnel perform testing, using approved devices, within a fully auditable system.

This commitment to excellence was formally recognized through ISO 15189:2022 accreditation awarded by SAC-SINGLAS, Singapore, in October 2024, covering Blood Gas Analysis and INR Testing at RIPAS Hospital. With ambitious plans to expand its accredited test scope and achieve full electronic result traceability across all POCT site facilities, Brunei's POCT programme stands as a benchmark for quality-driven, patient-centered diagnostic services.

PLENARY SESSION 3

LABORATORY QUALITY, STANDARDS, AND WORKFORCE DEVELOPMENT

SPEAKER 2

Dayang Nur Nisrinah Awang Haji Yussof (Brunei Darussalam)

Chief Scientific Officer and Quality Manager, Department of Scientific Services, Ministry of Health, Brunei

ADVANCING LABORATORY QUALITY SYSTEMS AND WORKFORCE DEVELOPMENT THROUGH ACCREDITATION AND CONTINUOUS IMPROVEMENT

June 21
11:10 am

ABOUT SPEAKER

Dayang Nur Nisrinah Awang Haji Yussof is a scientific laboratory professional with over 20 years of service at the Department of Scientific Services (DSS), Ministry of Health, Brunei. She is currently serving as Quality Manager for ISO/IEC 17025-accredited Health Science and Forensic Science laboratories. She holds a Master's degree in Food Science and Microbiology from the University of Strathclyde. She has held leadership roles including the Head of Division and the Head of Laboratory, overseeing laboratory operations, strategic planning, and quality governance. Her expertise includes laboratory accreditation, quality assurance, auditing, risk management, metrological traceability, and continual improvement. She is affiliated with the Allied Health Professions Council of Brunei Darussalam, the Asian Forensic Sciences Network (AFSN), and the Quality, Standards & Ethics Committee (QSEC).

ABSTRACT

Behind every reliable laboratory result is a journey of maintaining quality, building competency, and sustaining trust. This session shares the experience of the Department of Scientific Services (DSS) of the Ministry of Health, Brunei Darussalam, in maintaining internationally recognized laboratory standards across public health and forensic science laboratories. From ensuring metrological traceability and managing critical equipment to strengthening staff competency and meeting accreditation requirements, the journey reflects a balance between technical excellence and operational demands. It highlights leadership commitment, teamwork, continuous learning, strong quality culture, and contributing to sustaining reliable laboratory services.

Through DSS experience, offers practical insights into accreditation and continual improvement extend beyond compliance, forming a foundation of resilient and sustainable laboratory systems. As the national provider of analytical support services for public health and law enforcement agencies, DSS's reliable scientific services uphold quality, technical competence, and stakeholder confidence.

PANEL DISCUSSION

TRANSLATING DIAGNOSTIC INNOVATION INTO CLINICAL IMPACT

June 20
1:30 pm - 2:30 pm

MODERATOR

Dr. Hajah Surita Haji Mohamad Taib

President of Brunei Darussalam Association of Medical Laboratory Scientists (BAMLS)

PANELLISTS

Associate Professor Murat Cihan

Head of Department of Medical Biochemistry, Faculty of Medicine, Haliç University, Türkiye
Medical Director of Memorial Laboratories, Memorial Health Group

Professor Lorenzo Drago

Director at the Department of Laboratory Medicine and the UOC General Clinical Laboratory with Specialist Areas, IRCCS MultiMedica, Milan, Italy

Professor Gheyath K. Nasrallah

Professor of Biomedical Science and Head of Research at the College of Health Sciences, QU Health, Qatar University, Qatar

Dr. Leslie Lam

Consultant Chemical Pathologist and Deputy Medical Director, Parkway Laboratory Services, Singapore
President, Singapore Association of Clinical Biochemists (SACB)

SNIBE TECHNOLOGY SPOTLIGHT

Janice Ong Joe Hui
Product Manager (Snibe Diagnostic)

BEYOND AUTOMATION TOWARDS EXCELLENCE

June 20
2:45 pm

ABOUT THE SESSION

This Technology Spotlight session provides an educational overview of the MAGLUMI diagnostic platform and its role in addressing key health challenges facing modern populations. Presented by Snibe, the session will explore major public health concerns and demonstrate how advances in clinical chemistry and immunoassay technologies can enhance laboratory diagnostics to support disease detection, monitoring, and patient care.

Participants will gain insights into the broader MAGLUMI portfolio, including the X3, X6, X8, and X10 systems, and learn how these innovations contribute to improving laboratory efficiency, diagnostic accuracy, and healthcare outcomes. The session aligns with the symposium theme, *Advances in Clinical Chemistry & Immunoassay Technologies*, by highlighting the practical application of diagnostic innovation within clinical and public health settings.

The MAGLUMI X3 analyser will be featured on stage during the presentation. Following the session, attendees will have the opportunity to view the analyser up close, engage with experts, and ask questions about its capabilities and applications.

POSTER PITCH SESSION AND ABSTRACTS

RESEARCH SHOWCASE: POSTER PITCH

June 21
1:30 pm - 3:00 pm

ABOUT THE SESSION

The Poster Pitch Session provides an engaging platform for researchers and students to showcase their research work through concise and impactful presentations. Selected presenters will deliver a brief overview of their poster, highlighting the background, objectives, methodology, key findings, and significance of their study to the audience and judging panel.

Designed to encourage scholarly exchange and interdisciplinary discussion, the session offers participants the opportunity to share innovative ideas, receive constructive feedback, and foster potential research collaborations. Covering diverse areas related to biomedical, natural products chemistry, cell biology, bioinformatics, and Artificial Intelligence in healthcare, the Poster Pitch Session reflects the symposium's commitment to advancing research excellence and scientific communication.

Three outstanding presentations will be recognised during the symposium awards presentation.

Phytochemical Profiling and Biological Properties of Local *Nephrolepis biserrata* and *Leea indica* Root Extracts

Ampuan Mohamad Jalalludin bin Ampuan Ali, Hazim Ghani, Nurolaini Kifli & Hui Poh Goh

PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam, Jalan Tungku Link, Gadong, BE1410, Brunei Darussalam

ABSTRACT

Background:
There has been growing interest in investigating medicinal plants as potential alternatives to conventional cancer therapy, particularly due to concerns regarding adverse effects. However, the root parts of plants, including *Nephrolepis biserrata* (NB) and *Leea indica* (LI) remain relatively understudied despite their reported medicinal potential. To date, there have been limited studies investigating the phytochemicals profiling and biological properties of the roots of these plants in Brunei Darussalam.

Objectives:
To compare the effects of extraction techniques and solvents choices on the phytochemical profiling, antioxidant capacity, and cytotoxic activity of local NB and LI root extracts.

Methods:
Two green extraction techniques, specifically microwave-assisted extraction (MAE) and ultrasonic- assisted extraction (UAE), were performed using three different solvents (100% ethanol, 50% ethanol and distilled water), resulting in 12 root extract combinations. Total phenolic content (TPC) and total flavonoid content (TFC) of extracts were measured quantitatively using Folin-ciocalteu and aluminium chloride assays respectively. Antioxidant capacity was evaluated comprehensively using 2,2-diphenyl- 1-picrylhydrazyl (DPPH) radical scavenging, 2,2′-azinobis-(3-ethylbenzothiazoline-6-sulfonic acid) (ABTS) and ferric reducing antioxidant power (FRAP) assays. Cytotoxic activity of the extracts was assessed using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium (MTT) assay against breast cancer cell lines (MCF-7 and MDA-MB-231), colorectal cancer cells (HT-29), lung cancer cells (A549) and non-cancerous cells (HEK-293).

Results:
Current data revealed 100% and 50% ethanolic extracts of both plants possessed the highest TPC regardless of extraction technique. Contrastingly, the highest TFC was observed in the 50% ethanolic extracts of both plants. Generally, the 100% and 50% ethanolic extracts demonstrated the highest antioxidant activity across DPPH, FRAP and ABTS assays. Preliminary findings demonstrated cytotoxic activity of roots extracts in a concentration-dependent manner against MCF-7 cells.

Conclusion:
These findings highlight that NB and LI root extracts exhibit promising antioxidant and cytotoxic properties. Further studies investigating the underlying mechanisms of their cytotoxic activity are currently ongoing.

Phytochemical Profiling and Anti-urolithiatic Potential of *Morus alba Linn* Leaf Extracts: An *in vitro* Study

Amira Asyiqin Abdul Wahab, Nurolaini Kifli, Suwarni Diah & Siti Hanna Muharram

PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam, Jalan Tungku Link, Gadong, BE1410, Brunei Darussalam

ABSTRACT

Background:
Urolithiasis is characterised by stone deposition in the urinary tract. It poses a major global health issue due to its high prevalence, high recurrence rates, and treatment-associated side effects. *Morus alba Linn* leaves, traditionally used in Brunei Darussalam for kidney stone management, may offer therapeutic potential. While studies have elucidated their antioxidant, nephroprotective, and anti-inflammatory properties, the anti-urolithiatic efficacy of locally grown *M. alba L.* leaf extract remains unexplored.

Objectives:
This study investigated the *in vitro* effects of locally grown *M. alba L.* leaf extracts on different stages of calcium oxalate (CaOx) stone formation. The influence of traditional and modern extraction methods on bioactive composition and efficacy was examined.

Methods:
M. alba L. leaves were extracted using microwave-assisted extraction (60% aqueous methanol and 100% aqueous) and infusion (100% aqueous). Total phenolic and flavonoid contents, antioxidant capacity (DPPH, ABTS, and FRAP), and HPLC profiles of selected polyphenols were determined. Anti-urolithiatic activity was evaluated using in vitro nucleation, aggregation, and crystal growth assays. Crystal-cell binding capacity and membrane expression of CaOx monohydrate crystal- binding proteins were assessed in renal epithelial HEK-293 cells.

Results:
Phytochemical content and antioxidant capacity were comparable with previous reports. All extracts variably inhibited nucleation, aggregation, and crystal–cell adhesion, with some extracts reducing crystal growth. The infusion water extract showed the strongest overall inhibition in crystallisation assays. At the cellular level, all extracts suppressed membrane overexpression of α-enolase and annexin A1.

Conclusion:
M. alba L. leaf extracts exhibited varying inhibitory effects on CaOx crystallisation, with evidence of potential crystal-binding inhibition. Notably, the infusion extract demonstrated the most consistent inhibitory effects. This suggests that traditionally prepared extracts may contain bioactive constituents relevant for kidney stone prevention.

POSTER ABSTRACT 3

Cytotoxicity of Local *Nephrolepis biserrata* and *Rhodomyrtus tomentosa* Leaf Extracts: Effects of Extraction and Solvent Systems against Breast and Colorectal Cancer Cells

Muhamad Norna Beel Syafiq Zulkefli, Hui Poh Goh, Hazim Ghani & Nurolaini Kifli

PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam, Jalan Tungku Link, Gadong, BE1410, Brunei Darussalam

ABSTRACT

Background:
Conventional oncological therapies often lack specificity, highlighting the need for novel therapeutic strategies. *Nephrolepis biserrata* (NB) and *Rhodomyrtus tomentosa* (RT) have emerged as potential alternative sources of phytochemicals with reported antioxidant and cytotoxic potential. However, the effects of different green extraction methods on their biological efficacy remain unreported

Objectives:
This study compares microwave-assisted extraction (MAE) and ultrasonic-assisted extraction (UAE), using three different solvents (100% ethanol, 50% ethanol, and distilled water) to assess the phytochemical content, antioxidant activity, and cytotoxicity of NB and RT against breast (MCF-7 and MDA-MB-231) and colorectal (HT-29) cancer cells.

Methods:
Twelve leaf extracts were prepared using the aforementioned techniques. The phytochemical profiles were evaluated using Total Phenolic Content (TPC) and Total Flavonoid Content (TFC) assays. Antioxidant activity was determined using DPPH, FRAP, and ABTS assays, and cytotoxicity was assessed using MTT assay.

Results:
NB exhibited the highest TPC (80.5 ± 9.6 mg GAE/g) and TFC (29.4 ± 0.7 mg QE/g) via MAE with 50% ethanol. Conversely, RT showed its highest TPC via UAE with 50% ethanol (81.4 ± 4.1 mg GAE/g) and TFC via UAE with distilled water (11.5 ± 0.6 mg QE/g). The highest antioxidant activities were observed in UAE with 50% ethanol in NB and RT extracts. Regarding cytotoxicity, NB produced highest cytotoxicity in UAE with 50% ethanol against HT-29 (IC50: 311.9 ± 36.2 µg/mL), and MAE with distilled water against MCF-7 (IC50: 304.7 ± 26.6 µg/mL) and MDA-MB-231 (IC50: 247.6 ± 55.1 µg/mL). For RT, the highest cytotoxicity occurred in UAE with 50% ethanol against HT-29 (IC50: 252.9 ± 51.9 µg/mL), MAE with 50% ethanol against MCF-7 (IC50: 431.8 ± 28.8 µg/mL), and MAE with distilled water against MDA-MB-231 (IC50: 418.2 ± 78.0 µg/mL).

Conclusion:
The combination of 50% ethanol and UAE method is the optimal extraction technique for NB and RT in producing phytochemical yield, antioxidant activities, and cytotoxicity effect. While solvent choice and extraction technique significantly influence biological activity, further testing is required to fully elucidate these therapeutic effects.

POSTER ABSTRACT 4

Phytochemical Profiling, Antioxidant Capacity, and Cytotoxicity of *Leea indica* and *Cosmos caudatus*: A Comparison of Extraction Methods and Solvents

Amal Ummi Naqibah Binti Md. Zain, Nurolaini Kifli, Hui Poh Goh & Hazim Ghani

PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam, Jalan Tungku Link, Gadong, BE1410, Brunei Darussalam

ABSTRACT

Background:
Medicinal plants have attracted considerable interest due to their potential therapeutic properties. *Leea indica* (*L. indica*) and *Cosmos caudatus* (*C. caudatus*) are traditional medicinal plants that contain diverse bioactive compounds with reported biological activities. The extraction of these bioactive compounds may vary depending on the extraction techniques and solvent systems employed. However, the antioxidant and cytotoxic activities of native varieties grown locally remain unexplored.

Objectives:
This study aimed to compare the phytochemical profiles, antioxidant capacity, and in vitro cytotoxic effects of local *L. indica* and *C. caudatus* leaf extracts obtained using different combinations of extraction techniques and solvent systems.

Methods:
Leaf extracts were prepared via microwave- (MAE) and ultrasonic-assisted extraction (UAE) using 100% ethanol, 50% ethanol, and distilled water. Phytochemical content was characterised using total phenolic and total flavonoid content colorimetric assays. The antioxidant capacity was measured using Ferric Reducing Antioxidant Power (FRAP), 2,2-diphenyl-1-picrylhydrazyl (DPPH), and 2,2'-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid) (ABTS) assays. Cytotoxicity was assessed using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay against MCF-7 (breast), A549 (lung), and HT-29 (colorectal) cancer cell lines.

Results:
For both *L. indica* and *C. caudatus*, 50% ethanolic extracts generally exhibited the highest phenolic and flavonoid contents, and antioxidant capacity. Cytotoxicity analysis showed reductions in cell viability in both plants when tested against MCF-7, A549, and HT-29 cancer cell lines. Among *L. indica* extracts, the 50% ethanol MAE extract was displayed the lowest IC50 value (319 ± 112.7 µg/mL) when tested against MCF-7 cancer cells. In *C. caudatus* extracts, cytotoxicity analysis revealed that 50% ethanol was the most effective solvent, regardless of the extraction method used (IC50 > 500 µg/mL).

Conclusion:
Both *L. indica* and *C. caudatus* leaf extracts show antioxidant and cytotoxic activities, with 50% ethanol identified as the optimal extraction solvent. Further investigation is required to isolate specific bioactive compounds and elucidate their underlying cytotoxic mechanisms.

POSTER ABSTRACT 5

Green Synthesis of Silver Nanoparticles Using Aqueous Plant Extracts and their Anti-cancer Activity against Colorectal Cancer: A Systematic Review

Nurul Ashifah Binti Shafie, Nuramalina H. Mumin, Ya Chee Lim, Jestin Chellian, Sheba R. David & Rajan Rajabalaya

PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam, Jalan Tungku Link, Gadong, BE1410, Brunei Darussalam

ABSTRACT

Background:
Green-synthesised silver nanoparticles (AgNPs) produced using plant extracts offer a sustainable alternative for cancer treatment, providing selective cytotoxicity with fewer side effects.

Objectives:
This systematic review sought to assess the synthesis, characterisation, and *in vitro* anti-cancer activity of plant-mediated AgNPs against colorectal cancer (CRC) cell lines.

Methods:
In accordance with the PRISMA guidelines, a thorough literature search was carried out across PubMed, Scopus, ScienceDirect, and Google Scholar databases covering the period from 2010 to 2024. Studies were eligible for inclusion if they described the green synthesis of AgNPs using aqueous plant extracts and assessed their *in vitro* cytotoxic effects on colorectal cancer (CRC) cell lines. Relevant information, such as nanoparticle shape, size, IC50 values, synthesis conditions, and mechanisms of action, was systematically extracted and synthesised.

Results:
A total of nineteen studies met the inclusion criteria. AgNPs, achieving IC50 values below 5 µg/mL, were those prepared using *Annona muricata* and *Plumeria alba*. The primary mechanisms of action involved reactive oxygen species (ROS) generation, mitochondrial dysfunction, DNA fragmentation, and induction of apoptosis. The anti-cancer effectiveness was strongly associated with nanoparticle size, surface, charge, and the capping agents provided by phytochemicals.

Conclusion:
Green-synthesised AgNPs demonstrated strong anti-cancer potential against CRC cell lines, with greater efficacy linked to smaller particle sizes and bioactive phytochemical coatings. However, standardisation of synthesis protocols, along with further *in vivo* and detailed mechanistic studies, is essential to support their clinical application.

Potential of Green Synthesis of Silver and Gold Nanoparticles for the Management of Metabolic Associated Steatotic Liver Disease

Atiqah Suhaili, Ya Chee Lim, Mei Ann Lim, Lee Hoon Lim, Mohammad Mansoob Khan & Monowarul Mobin Siddique

PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam, Jalan Tungku Link, Gadong, BE1410, Brunei Darussalam

ABSTRACT

Background:
Metabolic-associated steatotic liver disease (MASLD) is a metabolic disorder associated with dyslipidaemia, insulin resistance, oxidative stress, and chronic inflammation. It may progress along a spectrum of hepatic injury from steatosis to fibrosis and advanced liver complications. Due to its asymptomatic nature during early disease stages and limited pharmacological treatment options, prevention and early intervention remain essential. Emerging biomedical approaches involving nanotechnology have introduced green-synthesised nanoparticles as potential therapeutic tools.

Objectives:
This work highlights the biosynthesis of AgNPs and AuNPs using medicinal plant extracts and summarises their reported biological effects relevant to MASLD management, including anti-hyperlipidaemic, anti-diabetic, antioxidant and anti-inflammatory activities.

Methods:
Published reports on medicinal plant-mediated synthesis of AgNPs and AuNPs were examined to consolidate evidence on biological activities relevant to MASLD-associated pathological pathways.

Results:
The literature indicates that green-synthesised AgNPs and AuNPs exhibit biological activities associated with modulation of lipid metabolism, glycaemic regulation, oxidative stress pathways, and inflammatory responses. These effects may correspond to biological processes implicated in MASLD pathogenesis, particularly those related to lipid and glucose regulation. Additionally, these findings support continued investigation of green-synthesised AgNPs and AuNPs for their potential therapeutic relevance in MASLD-associated pathways.

Conclusion:
Green-synthesised AgNPs and AuNPs show potential relevance to MASLD through biological activities associated with key disease pathways, including lipid dysregulation, oxidative stress, and inflammation. However, further mechanistic studies and preclinical validation in relevant MASLD models are required to clarify their therapeutic role in MASLD management.

POSTER ABSTRACT 7

Green-Synthesised *Clinacanthus nutans* derived Silver Nanoparticles Attenuate Hepatic Steatosis through Modulation of Lipid Metabolism and Chaperone-Mediated Autophagy in HepG2 Cells

Atiqah Suhaili, Brijesh Kumar Singh, Mei Ann Lim, Ya Chee Lim, Lee Hoon Lim, Rajan Rajabalaya, Abdur Rashid Mia, Helal Uddin, Madhulika Tripathi, Mohammad Mansoob Khan & Monowarul Mobin Siddique

Institute for Biodiversity and Environmental Research (IBER), Universiti Brunei Darussalam; Environmental and Life Sciences, Faculty of Science, Universiti Brunei Darussalam; PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam.

ABSTRACT

Background:
Metabolic dysfunction-associated steatotic liver disease (MASLD) is characterised by excessive hepatic lipid accumulation and is closely associated with obesity, insulin resistance and metabolic syndrome. Despite its increasing prevalence, effective pharmacological options remain limited, highlighting the need for alternative preventive and multitargeted approaches. *Clinacanthus nutans*, a Southeast Asian medicinal plant, has been reported to possess hepatoprotective properties. However, the biological applications of plant-derived compounds may be limited by their poor bioavailability. Therefore, nanoparticle-based formulations may enhance their biological efficacy.

Objectives:
This study aimed to investigate the effects of *C. nutans* derived silver nanoparticles (CNNP) on hepatic lipid accumulation and lipid metabolism in an in vitro model of hepatic steatosis. Methods: CNNP were synthesised and characterised prior to biological evaluation. An in vitro hepatic steatosis model was established in HepG2 cells using fatty acids and the effects of CNNP were then evaluated. Lipid accumulation was assessed using BODIPY staining, while the expression of genes and proteins involved in lipogenesis, cholesterol metabolism, endoplasmic reticulum stress, β-oxidation and chaperone-mediated autophagy (CMA) was evaluated using qPCR and western blotting. The knockdown of lysosome-associated membrane protein 2 alpha (LAMP2α) was also performed to assess the involvement of CMA in lipid clearance.

Results:
CNNP treatment at 50 µg/mL reduced lipid accumulation in fatty acid-induced HepG2 cells. This was accompanied by the downregulation of markers for lipogenesis, cholesterol metabolism and endoplasmic reticulum stress. CNNP treatment also increased the expression of LAMP2α, a key marker of CMA, at both transcriptional and translational levels. LAMP2α knockdown attenuated the expression of β-oxidation and mitochondrial biogenesis markers, suggesting the involvement of CMA in promoting lipid clearance.

Conclusion:
These findings suggest that CNNP attenuate hepatic steatosis in vitro by suppressing de novo lipogenesis and promoting β-oxidation through chaperone-mediated autophagy.

Mitochondrial Dysfunction Drives Adaptive Glucose-Supported Metabolism Associated with Oxidative Stress

Nur Izzah Binti Bungsu, Mas Rina Wati Haji Abdul Hamid & Mark IR Petalcorin

PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam, Jalan Tungku Link, Gadong, BE1410, Brunei Darussalam

ABSTRACT

Background:
Mitochondrial dysfunction is increasingly recognized as a contributor of cancer-associated metabolic alterations, including increased glycolytic activity, and elevated reactive oxygen species (ROS). In response to impaired mitochondrial oxidative phosphorylation (OXPHOS), cells may undergo metabolic reprogramming to sustain survival under energetic stress. Although glycolytic compensation is frequently observed during mitochondrial dysfunction, it remains unclear whether these metabolic alterations represent a mere consequence of mitochondrial impairment or active adaptive survival mechanisms. This is important in cancer because cancer cells survive by adapting metabolically. Furthermore, the relationship between ROS and glucose-supported metabolic adaptation remains incompletely understood.

Objective:
This study aimed to investigate whether mitochondrial dysfunction drives adaptive glucose-supported metabolism and whether ROS is linked to the sustainability of this response.

Methods:
The *in vivo* nematode model *Caenorhabditis elegans* was primarily employed. Mitochondrial function was disrupted using Rotenone, a Complex I OXPHOS inhibitor. Glycolysis was used to test potential compensatory metabolic adaptation. Organismal viability was assessed as an integrated indicator of metabolic fitness in OXPHOS-deficient worms under glucose-supplemented conditions and glycolytic inhibition, enabling comparison of metabolic responses across treatments. Relative lactate levels were quantified in glucose-supplemented OXPHOS-deficient worms to determine potential glycolytic metabolic reprogramming. Reactive oxygen species (ROS) levels were also measured to evaluate redox alterations associated with OXPHOS impairment and metabolic adaptation.

Results:
Rotenone altered glucose metabolism and promoted lactate-associated responses, indicating activation of glycolytic metabolic reprogramming. Moderate glucose supplementation partially improved physiological outcomes, suggesting the presence of adaptive metabolic compensation. However, excessive glucose exposure diminished these beneficial effects, indicating limitations in compensatory capacity. Oxidative stress was also closely associated with the observed metabolic alterations.

Conclusion:
This study demonstrates that mitochondrial dysfunction can induce adaptive metabolic responses through glycolytic metabolic reprogramming. However, the compensatory capacity of this response appears to be limited under excessive metabolic stress conditions.

Beyond Prediction-Stage Supervision: Disease-Semantic Guided Representation Learning for Chest X-Ray Disease Detection

Zang Dong & Wong Wei Kit

Department of Electrical & Computer Engineering, Curtin University Malaysia, Sarawak, Malaysia

ABSTRACT

Background:
Lesions in chest X-ray (CXR) images often exhibit low contrast, ambiguous boundaries, and substantial appearance variability. Their detection is further complicated by anisotropic anatomical structures, including ribs, pulmonary textures, and the mediastinum, which obscure disease-related patterns. In addition, discriminative evidence for disease detection is not solely contained in visual pixels but is also encoded in structured clinical semantics, such as disease names and radiological descriptions. However, existing YOLO-style and DETR-style detectors primarily learn visual representations independently of disease semantics and typically introduce semantic information only during prediction, resulting in representations that remain vulnerable to anatomical interference, inconsistent across hierarchical scales, and weakly aligned with disease concepts.

Objective:
This paper addresses the problem of constructing disease-aware encoder representations for CXR disease detection.

Methods:
We identify three coupled representation bottlenecks: directional interference from anatomical structures, semantic-spatial asymmetry among hierarchical features, and the representation gap between visual features and disease semantics. To address these limitations, we propose MF-DEIM, a DETR-style vision-language detection framework that reconstructs the encoder as a cascaded representation learning process.

Results:
The framework progressively performs directional spatial calibration, hierarchical feature coordination, and disease-semantic anchoring through Multi-axis Direction-aware Cross-axis Attention (MDCA), Hierarchical-Aware Adaptive Feature Fusion (HAFF), and Dual-Granularity Vision-Language Coupling (DGVL), respectively. Experiments on the MS-CXR benchmark show that MF-DEIM achieves an mAP@[0.5:0.95] of 43.3\% using only 6.5M trainable parameters and 9.5 GFLOPs, outperforming YOLO-style detectors and the DEIM baseline by 5.3--8.6 percentage points.

Conclusion:
These results demonstrate that incorporating disease semantics during encoder-stage representation learning provides a more effective paradigm for CXR disease detection than conventional prediction-stage semantic supervision.

WORKING COMMITTEE

UBD-Snibe Symposium 2026

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UBD-Snibe Symposium 2026

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Emcee	Dr. Deeni Rudita bin Idris (Lead) Muhammad Yadiy Wa'ie Mukminin bin Rizalman

SUMMARY

The UBD–Snibe Symposium 2026, themed *Advances in Clinical Chemistry & Immunoassay Technologies*, was successfully held through a co-hosting partnership between PAPRSB Institute of Health Sciences (IHS), Universiti Brunei Darussalam (UBD), and Snibe (Shenzhen New Industries Biomedical Engineering Co. Ltd). Organised in collaboration with RTCT Diagnostics, the symposium brought together a diverse audience of students, researchers, clinicians, laboratory professionals, policymakers, and industry representatives. The event reflected a shared commitment to strengthening diagnostic science and enhancing healthcare delivery in Brunei.

As the first Snibe scientific symposium hosted in Brunei, the event provided an important platform for international knowledge exchange and national capacity building. Anchored within UBD's academic environment, the symposium offered a neutral and intellectually stimulating space for dialogue on emerging diagnostic technologies and their clinical applications. It catalysed new opportunities for academic–industry collaboration in laboratory medicine.

PAPRSB IHS played a key role in shaping the academic direction of the programme, ensuring discussions were contextualised to local healthcare priorities and workforce needs. Complementing this, Snibe contributed global perspectives and showcased advancements in clinical chemistry and immunoassay technologies, creating a balanced and educational scientific agenda. Through a keynote lecture, a series of plenary presentations, and interactive discussions, participants explored the evolving role of diagnostics in addressing non-communicable diseases and supporting quality-driven patient care.

Overall, the symposium enhanced participants' understanding of diagnostic innovations while fostering meaningful academic-industry engagement. It also contributed to strengthening professional capacity within Brunei's laboratory workforce and laid a strong foundation for future collaborations in research, training, and professional development.