9TH INTERNATIONAL BIOTECHNOLOGY SYMPOSIUM 2026

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ABSTRACT BOOK

STRENGTHENING A SUSTAINABLE FUTURE WITH EMERGING FRONTIERS IN BIOTECHNOLOGY

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FOREWORD BY THE VICE CHANCELLOR

Universiti Malaysia Sabah, Malaysia

Bismillahirrahmanirrahim.

Assalamualaikum Warahmatullahi Wabarakatuh, Salam Sejahtera, Salam Sabah Maju Jaya, and Salam UMS Bertekad Cemerlang - *UMS The BRAIN of BORNEO.*

It is my great pleasure to extend a warm welcome to all participants, researchers, academicians, students, industry representatives, and distinguished guests attending the 9th Biotechnology Symposium 2026 (SB9). I am delighted to note that this symposium continues to serve as an important platform for the exchange of scientific knowledge, innovative ideas, and collaborative opportunities among biotechnology stakeholders from Malaysia and abroad.

The theme of this year's symposium, "Strengthening a Sustainable Future with Emerging Frontiers in Biotechnology," aptly reflects the pivotal role of biotechnology in addressing contemporary global challenges. Advances in biotechnology have transformed the way we approach healthcare, agriculture, environmental conservation, food security, and industrial development. As we move towards a more sustainable future, interdisciplinary collaboration and scientific innovation will be essential in generating impactful solutions for society.

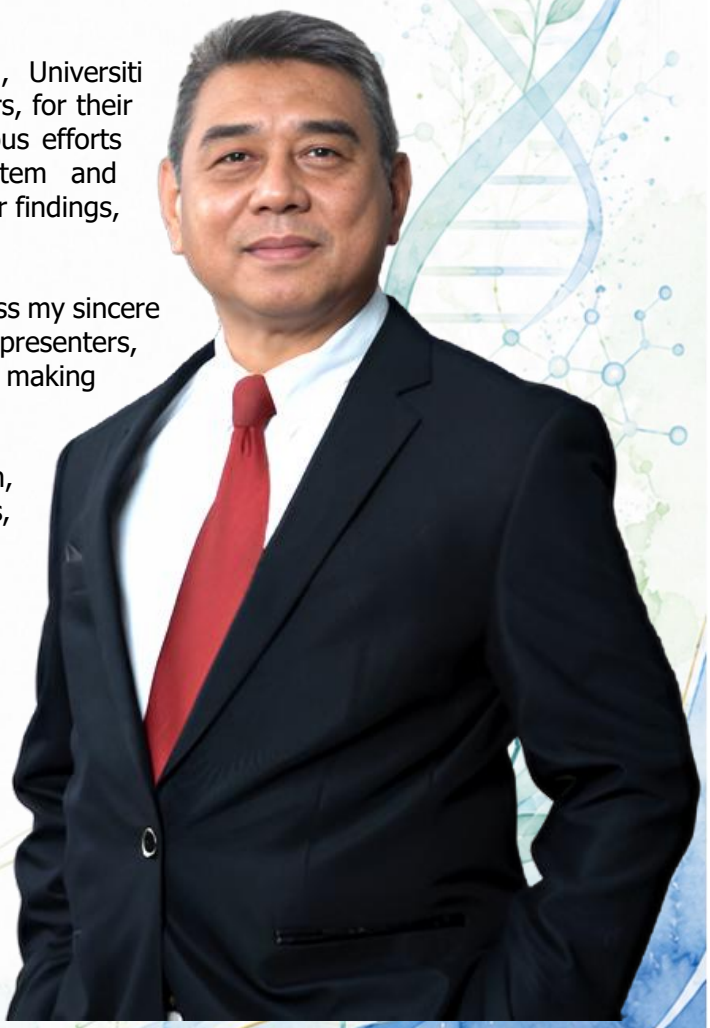
I commend the Biotechnology Research Institute (BRI), Universiti Malaysia Sabah, together with its co-organizers and partners, for their commitment to organizing this symposium. Their continuous efforts have strengthened the biotechnology research ecosystem and provided valuable opportunities for researchers to share their findings, establish networks, and foster strategic collaborations.

On behalf of Universiti Malaysia Sabah, I would like to express my sincere appreciation to all sponsors, collaborators, speakers, presenters, reviewers, and participants for their invaluable support in making this symposium a success.

I wish all participants a fruitful and rewarding symposium, filled with engaging discussions, meaningful collaborations, and new scientific insights.

Thank you.

Professor Datuk Dr. Kasim Haji Mansor, JP
Vice Chancellor
Universiti Malaysia Sabah



MESSAGE BY THE DIRECTOR

Biotechnology Research Institute, UMS

Bismillahirrahmanirrahim.

Assalamualaikum Warahmatullahi Wabarakatuh, Salam Sejahtera, Salam Sabah Maju Jaya, and warm greetings.

It is with great pleasure that I welcome you to the 9th Biotechnology Symposium 2026 (SB9) and present this collection of abstracts, which showcases the diverse and innovative research contributions of scientists, academicians, students, and industry professionals.

This year's theme, "Strengthening a Sustainable Future with Emerging Frontiers in Biotechnology," reflects our collective commitment to harnessing biotechnology as a driving force for sustainable development. As the world continues to face unprecedented challenges in healthcare, food security, environmental sustainability, and industrial innovation, biotechnology has become increasingly vital in delivering science-based solutions that enhance the quality of life while preserving our natural resources.

Over the years, the Biotechnology Symposium has grown into an important scientific platform that promotes knowledge exchange, interdisciplinary collaboration, and meaningful partnerships among researchers from academia, government agencies, research institutions, and industry. Beyond the presentation of research findings, the symposium provides an avenue for sharing ideas, fostering new collaborations, and translating scientific discoveries into real-world applications that benefit society. I would also like to extend my heartfelt gratitude to our co-organisers, sponsors, journal partners, and collaborating institutions for their continued support, which has contributed significantly to the success of this symposium. Your partnership reflects our shared commitment to advancing biotechnology research and innovation for the benefit of society and the sustainable development of our nation.

It is my sincere hope that this symposium will continue to strengthen scientific networks, inspire future innovations, and foster lasting collaborations that extend beyond this event. May the discussions and research presented here stimulate new ideas and contribute to the advancement of biotechnology at both national and international levels.

I wish all participants a successful, productive, and inspiring symposium.

Thank you.

Prof. Dr. Jualang @ Azlan Gansau

Director
Biotechnology Research Institute

MESSAGE BY THE CHAIRPERSON

9th International Biotechnology Symposium 2026

Salam Sejahtera, Salam Sabah Maju Jaya, and Warm Greetings.

It is my great pleasure to welcome all participants, speakers, researchers, students, and guests to the 9th Biotechnology Symposium 2026 (SB9). On behalf of the organizing committee, I would like to thank everyone for your participation and support in making this symposium possible.

The theme of this year's symposium, Strengthening a Sustainable Future with Emerging Frontiers in Biotechnology, highlights the important role of biotechnology in addressing global challenges and improving the well-being of our communities. We hope this symposium provides an excellent platform for researchers, students, and industry partners to share their latest findings, exchange ideas, and build meaningful collaborations.

I would like to express my sincere appreciation to our keynote and invited speakers, presenters, reviewers, sponsors, co-organizers, collaborators, and every member of the organizing committee for their commitment and support. Without your contributions, this symposium would not have been possible.

I also hope that all participants will take this opportunity to network, exchange knowledge, and establish new collaborations that will continue beyond this symposium.

Finally, I wish everyone a successful and enjoyable symposium. May SB9 inspire new ideas, strengthen scientific partnerships, and contribute to the advancement of biotechnology for a more sustainable future.

Thank you and I wish you all a fruitful symposium.

Assoc. Prof. Ts. Dr. Wilson Yong Thau Lym
Chairperson
9th International Biotechnology Symposium

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SB9-059

Extraction-free RT-qPCR method for the rapid detection of Chikungunya Virus

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Abstract

Rapid detection of Chikungunya virus (CHIKV) is critical for effective outbreak management, yet standard RNA extraction protocols are often time-consuming and labour-intensive. This study aimed to optimize an extraction-free RT-qPCR method to facilitate rapid CHIKV detection directly from serum samples. Three extraction-free RT-qPCR methods (direct loading, dilution 1:2, and heat treatment) were screened across a 5-log range (10^5 – 10^9 copies/reaction) using purified CHIKV RNA spiked into serum. The optimal protocol was subsequently validated using serum matrices spiked with intact, PEGylated CHIKV (10^1 – 10^4 PFU/ml) to simulate clinical specimens. The dilution 1:2 method consistently minimized serum-mediated enzymatic inhibition compared to other methods, achieving lower quantification cycle (Cq) values and strong linearity R^2 of 0.9982 when testing with intact viral particles. The analytical Limit of Detection (LoD) of the optimized 1:2 dilution was of 5 PFU/ml (Cq = 33.19 ± 0.23, 100% replicate positivity), which correspond to 38.4 RNA copies per reaction. The extraction-free methods exhibited lower efficiencies compared to standard extraction-mediated methods, yielding cycle threshold shift ranging from ~5 to 9 cycles. This is expected due to the absence of a chemical concentration step. The typical circulating viremia observed in acute patients exhibit 2.94 x 10^4 to 1.6 x10^8 PFU/ml, thus the validated dilution 1:2 extraction-free assay can still serve as a highly viable, economical, and field-deployable alternative to traditional extraction methodologies for rapid CHIKV surveillance.

Keywords: Chikungunya virus, RT-qPCR, Extraction-free

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