

# RISE

*Catalysing Global Research Excellence*

## *Robotics Technology:*

Driving Innovation, Transforming Future

### **ReNeU's 1<sup>st</sup> Anniversary**

Galvanising Research Excellence

### **UiTM's Global Effort in Training Young Aspiring Neuroscientists**



eISSN 2805-5683



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# RISE

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## ABOUT THE MAGAZINE

RISE Magazine is published by Office of the Deputy Vice-Chancellor (Research & Innovation) with the aim of highlighting the research and innovation on of experts from multidisciplinary fields in UiTM. It serves as a platform for researcher to showcase their high quality and impactful findings, activities and innovative solution through publication. Contribution of these ideas come from academicians, researchers, graduates and universities professionals who will enhance the visibility of research and strive to elevate Universiti Teknologi MARA to global standards. This is an effort to promote research as a culture that should be embraced by everyone.

## ABOUT UiTM

Universiti Teknologi MARA (UiTM) is a public university based primarily in Shah Alam, Malaysia. It has grown into the largest institution of higher education in Malaysia as measured by physical infrastructure, faculty and staff, and student enrollment. UiTM is the largest public university in Malaysia with numerous campuses throughout all 13 states in Malaysia. There is a mixture of research, coursework and programmes offered to the students. Office of the Deputy Vice-Chancellor (Research & Innovation) or known as TNCPI (*Timbalan Naib Canselor (Penyelidikan & Inovasi)*) serves a *Pusat Tanggungjawab (PTJ)* that navigates the research and innovation of university in achieving UiTM agenda. TNCPI office strives to mobilise the faculties, and campuses to move together and promotes cooperation among researchers in bringin UiTM as a leading global university of science, technology, and innovation by 2025.



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# FOREWORD

## VICE-CHANCELLOR



To excel globally, research must be weighed in as a key factor to navigate the university's direction in making an impact. This is especially when focusing on translational research where society can benefit greatly from its findings.

Congratulations to the Office of the Deputy Vice-Chancellor (Research and Innovation) on the publication of this magazine, aptly called RISE. I am pleased to see that the COVID-19 pandemic has not dampened UiTM researchers' pursuit of their dreams. The contents of these pages allow active research and innovation activities be shared with our stakeholders, local and international collaborators.

As UiTM aspires to be a world-renowned university by 2025, I believe that our current research practises are on track. For example, the featured article in the magazine highlights the key success of robotic technology ventured by our researcher, Associate Professor Dr Hanafiah Yussof, who formed a start-up company to advance robotic technology in Malaysia. His contribution to the robotics industry, the Robot Rehabilitation System for Autism Therapy, is an example of innovation that can transform the future.

In our pursuit of changing the future, we at UiTM are cognisant of the current and future direction of research to facilitate research from different disciplines. We have researchers using drones for pineapple plantations, exploring hybrid rockets with Equatorial Space System (ESS), and researching sanitation, collection, and sewage/wastewater treatment systems with Indah Water Konsortium (IWK) Sdn Bhd, to name a few of the work we have been actively involved in.

Hence, we will continue to contribute and make progress associated with processes and knowledge pivotal for impactful research, especially in developing knowledge-based technology that benefit society.

Ultimately, I am confident that the publication of this magazine will further strengthen the visibility of UiTM research and innovation.

Thank you.

**PROFESSOR Ts. DR HAJAH ROZIAH MOHD JANOR**

Vice-Chancellor

Universiti Teknologi MARA

# FOREWORD

DEPUTY VICE-CHANCELLOR (RESEARCH & INNOVATION)



I would like to congratulate the editorial team on the release of RISE, a research magazine highlighting our research and innovation efforts and accomplishments. The magazine exemplifies our office's synergistic and collaborative efforts, as well as those of our researchers and article contributors, to advance the visibility agenda.

As the office in charge of research and innovation, we are constantly hoping that every research result and invention will benefit the community through translational research. Assoc. Prof. Dr Hanafiah Yussof's Robot Rehabilitation System for Autism Therapy, for example, has aided the autism community in improving communication. Even more proud that this endeavour resulted in the formation of a start-up company.

Despite the COVID-19 pandemic, UiTM researchers continued to conduct relevant research activities despite the uncertainty. The scale of the events varies from a small effort to install solar panels at a rural school and organise virtual conferences to the use of drones and precision agriculture technology on pineapple plantations. Notably, a Bioextreem solution capable of inhibiting 99.99 percent of bacteria and viruses was also developed.

With these accomplishments, we will continue to support research efforts, particularly those aimed at developing knowledge-based technology with a social benefit in mind.

Finally, I believe that this magazine can serve as a platform for the visibility agenda by incorporating a wide range of science and research perspective, fostering more potential collaboration between UiTM researchers and local and international institutions and industries.

Thank you.

**PROFESSOR Ts. DR MOHD NAZIP SURATMAN**

Deputy Vice-Chancellor (Research & Innovation)

Universiti Teknologi MARA

# MESSAGE

## FROM THE CHIEF EDITOR



Alhamdulillah.

It gives me great pleasure to see this issue published. We received a massive and impactful submission to feature our UiTM community's research stories. Despite the difficult circumstances, UiTM researchers are proactive in carrying out research activities and events within their respective capacities.

Allow me to express my heartfelt gratitude to all of the authors of the articles in this magazine. The publication of this issue would have been far more difficult to achieve without their contributions. Here, we feature Assoc. Prof. Dr Hanafiah Yussof of the College of Engineering's beautiful journey into robotic technology. I believe that robotics has always been on the national agenda for its true mission in helping people. We chose to focus on robotics to honour a UiTM researcher who has dedicated his academic

career to assisting society through technological advancements. To all researchers out there, we hope that his inspiring journey will rekindle our enthusiasm for research.

The inaugural issue of the RISE magazine also features research achievements and the multidisciplinary research areas in UiTM which support national priorities. Research Nexus UiTM (ReNeU) celebrates its first anniversary in 2021, marking a major milestone in its journey. Faculty of Pharmacy is making a global impact towards producing young aspiring neuroscientists. The exploration of Lembah Benua has highlighted the wonderful forest as a potential research station. The potential of fine art logistic industry is also of utmost importance towards making Malaysia as a top art market hub. These are some of the exciting research stories and I invite you to discover more in this issue.

We sincerely hope to bring you more research news from the UiTM family in the coming issues. Have fun reading!

### **DR MOHD MUZAMIR MAHAT**

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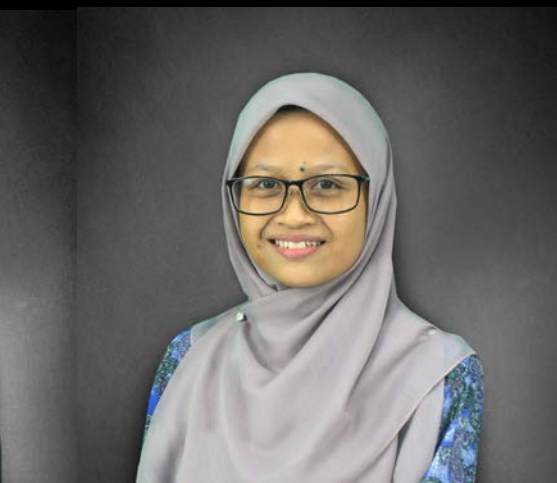
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Collaboration between  
NEXTGREEN Global and UiTM will  
strengthen UiTM cooperation with  
public listed company in zero waste  
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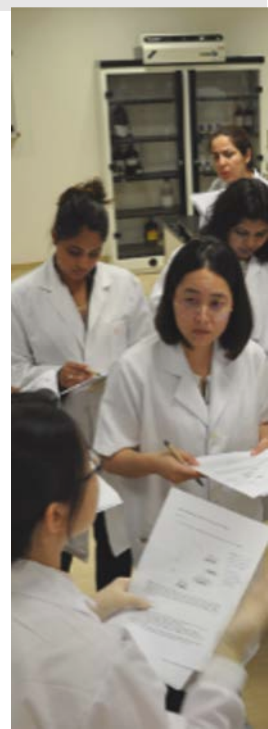
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# 07

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# Good Bacteria That Lower Cholesterol: Myth or Truth?

by Prof. Dr Kalavathy Ramasamy  
Assoc. Prof. Dr Lim Siong Meng  
Dr Faezah Sabirin  
Nur Syakila Rohawi



**P**robiotics, more widely known as the "good" bacteria, are increasingly recognised for their beneficial effects in health maintenance. Nevertheless, just how good are these microorganisms? Researchers at the Collaborative Drug Discovery Research (CDDR) Laboratory, Faculty of Pharmacy, Universiti Teknologi MARA (UiTM), have spent years working on their quest to uncover the potential health-promoting properties of strains of lactic acid bacteria (LAB) with potential probiotic characteristics (Ramasamy et al., 2012). They have invested a significant amount of time in preclinical studies because they see the importance of evidence-based research. Their LAB of interest, 12 strains in total, were isolated from local soy-based fermented food. It appears that each LAB strain is unique and possesses strain-dependent cholesterol-lowering properties. *Lactobacillus plantarum* LAB12, one of their promising LAB strains, was found to lower cholesterol per gramme of liver to the baseline in zebrafish fed a high cholesterol diet (Lim et al., 2017). Seeing is believing! With the aid of fluorescence microscopy, the researchers demonstrated for the first time the visualisation of cholesterol taken up by *L.*

*Plantarum* LAB12 into their cellular membrane by a process called assimilation (Nur Syakila et al., 2019).

Most importantly, acute and sub-chronic exposure of rodents to *L. Plantarum* LAB12 indicated no toxicity-related effects (Fareez et al., 2019). In order to address the vulnerability of LAB to heat and low pH, the researchers encapsulated *L. Plantarum* LAB12 within a novel microcapsule formulation with a unique blend of natural polysaccharide and vegetable-based protein that serve as a shield that renders the LAB pH-tolerant and heat-resistant (filed for innovation utility). These critical features allow application breakthrough in that *L. Plantarum* LAB12 can be stored at room temperature and consumed either directly or by simply adding them to one's favourite food or drinks. To date, researchers from the CDDR, Faculty of Pharmacy, UiTM have successfully demonstrated the feasibility of their prototype using the existing set-up at their laboratory. They anticipate that *L. Plantarum* LAB12 can be potentially commercialised as functional food, given that healthy living is an increasingly important part of the food market.

# Congratulations

**PROF. DATIN DR  
HAPIZAH MD NAWAWI**

Faculty of Medicine  
Institute of Pathology, Laboratory & Forensic Medicine (I-PPerForm)  
and the Malaysian FH research team

on the successful publication in the flagship journal

**THE LANCET**

(Impact Factor: 79.321)

**Global perspective of familial  
hypercholesterolaemia:  
a cross-sectional study from the  
EAS Familial Hypercholesterolaemia  
Studies Collaboration (FHSC)**



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# Congratulations

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# Congratulations

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(IPROMISE)

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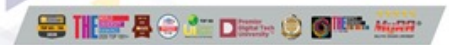
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\*Source: PLoS Biol 18(10): e3000918. <https://doi.org/10.1371/journal.pbio.3000918>



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Dr Azri X His Student	Daus Husny	Fresh-Musky-Fruity	Unisex	NOT200703739K
My Subject	Organic Chemistry	Sweet-Fruity-Floral	Unisex	NOT200703741K
My Love	Ayla	Sweet-Vanilla-Chocolate	Unisex	NOT210900275K
Crush	Najla	Flowery-Musky	For Her	NOT200703738K

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Dr Azri's Perfume



drazrisperfume



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# UiTM Research Strength Supporting National Priorities



<b>Industrial Technology</b>	01	Advanced Materials
	02	Smart Manufacturing
	03	Plant and Process
	04	Construction & Infrastructure
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	02	Logistics & Halal-hub
	03	EV-AV,
	04	UAV, Aviation
<b>Cyber Technology</b>	01	Space & Satellite
	02	Big Data & Data Analytics
	03	Cyber Security
	04	Robotics & AI
	05	Smart Sensors
<b>Energy &amp; Environment</b>	01	Water Security
	02	Renewable Energy
	03	Environment & Climate Change
	04	Solar Technology
	05	Biodiversity
	06	Food Security
<b>Health &amp; Wellness</b>	01	Preventive healthcare
	02	Sick Care
	03	Rehabilitative Care
	04	Genomics
	05	Non-Communicable Disease
	06	Natural Product
<b>Social Creativity &amp; Innovation</b>	01	Creativity
	02	Islamic Finance Fintech
	03	Socio Innovation
	04	B40-Talent
	05	Entrepreneurship & Artrepreneur
	06	Socio-Economic

Area
  Sub-Area



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1

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International Journal of Remote Sensing  
Volume 38, Issue 16, 18 August 2017, Pages 4741-4764  
**Modelling and mapping of above ground biomass (AGB) of oil palm plantations in Malaysia using remotely-sensed data** (Article)  
Azari, N.<sup>a,b</sup>, Suratman, M.N.<sup>a,b</sup>, Jusuf, J.<sup>c</sup>  
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2

## Update the Research ID

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*IWK-UiTM Research Collaboration*

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***Addressing Public Health Concerns Through University-Industry Collaboration***

**Assoc. Prof. Dr Khalilah Abdul Khalil**

Faculty of Applied Sciences, UiTM Shah Alam

***Adaptive Strategies for Microbial Performance Through Optimization Approach***

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**Assoc. Prof. Dr Mohd Rizaimy Shaharudin**

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Faculty of Accountancy, UiTM, Campus Sungai Petani, Kedah

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***The Effectiveness of the ICQS Bukit Kayu Hitam and CIQ Sadao's 24-hour Operation***

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***Green Event Research @Borneo Jazz Festival***

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***Potential of Fine Art Logistic Industry***

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***Clove, Habbatu Sauda, Neem and COVID 19***

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***UiTM's Global Effort in Training Young Aspiring Neuroscientists***

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