

Diversity of seaweeds in Port Dickson, Negeri Sembilan.  
Photo credits: Dr. Yow Yoon Yen

## Foreword by Prof. Abhi



Congratulations to the members of the department who have yet again demonstrated their excellence in various different aspects of academia; be it in teaching, research or service. I also want to thank everyone; including the SST administration for being very patient and supportive towards my role as an interim HOD.

This issue of the DBS bulletin is extra special because it includes 2 new sections: 1) Perspective/Experience of our Undergraduates and 2) Snapshot profile of our Postgraduate Students. I thoroughly enjoyed reading both articles. They brought back fond memories of my (not so distant 😊) student past but more importantly they served an important reminder that our dear students are our prized assets. Very often, in our zeal to achieve Key Performance Indicators and ‘objective targets’, we forget our real role, purpose and impact. At Sunway University, it is our students; their education and welfare should always be prioritized within the context of available resources. I congratulate Dr. Kavita for introducing these sections and I am looking forward to reading more individual stories, experiences and achievements of our students.

While we celebrate the achievements of individuals; it is also equally important to appreciate the journey that these individuals take. It is evident that all of us suffer from what we perceive as ‘failures’ but we need to take heart that we are not alone and there is always someone who either shares the same experience or there to understand and help you. At DBS, we are really committed towards increasing our student engagement. The recent establishment of the Sunway Biological Sciences Society is an excellent student-led initiative that I am really looking forward to supporting. I really hope that we get 100% student and staff involvement in the planned activities. I am certain that the society will be a great platform for the students to further enhance their 21<sup>st</sup> century skills and prepare themselves for their future. For the staff; this will be an excellent opportunity to increase our positive influence, impact and just have fun and be young”ish” again!

Finally, although I have not met all of you since I became the interim Head, I would like to thank everyone for your overwhelming support and I welcome all of you to not hesitate to meet me in person if you have some ideas or concerns to share or you just want to say hello. I also welcome emails ([abhiv@sunway.edu.my](mailto:abhiv@sunway.edu.my)). Thank you!

# Research Publications

1. Aldoghachi AF, Baharudin A, Ahmad U, Chan SC, Ong TA, Yunus R, Razack AH, Yusoff K and Veerakumarasivam A. Evaluation of CERS2 Gene as a Potential Biomarker for Bladder Cancer. *Disease Markers* 2019, Article ID 3875147.

<https://doi.org/10.1155/2019/3875147>

**Significance of findings:** The ceramide synthase 2 (CERS2) gene has been linked to tumour recurrence and invasion in many different types of cancers including bladder cancer. In this study, the expression levels of CERS2 in bladder cancer cell lines were analysed using qRT-PCR and the protein expression in clinical bladder cancer histopathological specimens were examined via immunohistochemistry. The potential utility of CERS2 as a predictive biomarker of response to oncolytic virotherapy was assessed by correlating the CERS2 mRNA expression to IC50 values of cells treated with the Newcastle disease virus (NDV), AF2240 strain. This study demonstrates that CERS2 is differentially expressed in different types of bladder cancer cell lines and that the siRNA-mediated downregulation of the expression of CERS2 reduces the migratory potential of UMUC1 bladder cancer cells. However, there were no significant correlations between the expression levels of the CERS2 protein with bladder cancer grade/stage or between the IC50 values of cells treated with NDV and CERS2 expression. Although the utility of CERS2 expression may be limited, its potential as an antimigration cancer therapeutic should be further examined.

2. Yap WF, Tay V, Tan SH, Yow YY, Chew J. Decoding Antioxidant and Antibacterial Potentials of Malaysian Green Seaweeds: *Caulerpa racemosa* and *Caulerpa lentillifera*. *Antibiotics (Basel)* 2019, 8(3). pii: E152.

<https://doi.org/10.3390/antibiotics8030152>

**Significance of findings:** Seaweeds are gaining a considerable amount of attention for their antioxidant and antibacterial properties. *Caulerpa racemosa* and *Caulerpa lentillifera*, also known as 'sea grapes', are green seaweeds commonly found in different parts of the world, but the antioxidant and antibacterial potentials of Malaysian *C. racemosa* and *C. lentillifera* have not been thoroughly explored. In this study, crude extracts of the seaweeds were prepared using chloroform, methanol, and water. Total phenolic content (TPC) and total flavonoid content (TFC) were measured, followed by in vitro antioxidant activity determination using 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay. Antibacterial activities of these extracts were tested against Methicillin-resistant *Staphylococcus aureus* (MRSA) and neuropathogenic *Escherichia coli* K1. Liquid chromatography-mass spectrometry (LCMS) analysis was then used to determine the possible compounds present in the extract with the most potent antioxidant and antibacterial activity. Results showed that *C. racemosa* chloroform extract had the highest TPC ( $13.41 \pm 0.86$  mg GAE/g), antioxidant effect ( $EC_{50}$  at  $0.65 \pm 0.03$  mg/mL), and the strongest antibacterial effect ( $97.7 \pm 0.30\%$ ) against MRSA. LCMS analysis proposed that the chloroform extracts of *C. racemosa* are mainly polyunsaturated and monounsaturated fatty acids, terpenes, and alkaloids. In conclusion, *C. racemosa* can be a great source of novel antioxidant and antibacterial agents, but isolation and purification of the bioactive compounds are needed to study their mechanism of action.

3. Yusof EMD, Latif MAM, Tahir MIM, Sakoff JA, Simone MI, Page AJ, **Veerakumarasivam A**, Tiekink ERT, Ravooof TBSA. o-Vanillin Derived Schiff Bases and Their Organotin(IV) Compounds: Synthesis, Structural Characterisation, In-Silico Studies and Cytotoxicity. *Int. J. Mol. Sci.* 2019, 20(4): 854  
<https://doi.org/10.3390/ijms20040854>

**Significance of findings:** Six new organotin(IV) compounds of Schiff bases derived from S-R-dithiocarbazate [R = benzyl (B), 2- or 4-methylbenzyl (2M and 4M, respectively)] condensed with 2-hydroxy-3-methoxybenzaldehyde (oVa) were synthesised and characterised by elemental analysis, various spectroscopic techniques including infrared, UV-vis, multinuclear ( $^1\text{H}$ ,  $^{13}\text{C}$ ,  $^{119}\text{Sn}$ ) NMR and mass spectrometry, and single crystal X-ray diffraction. The organotin(IV) compounds were synthesised from the reaction of  $\text{Ph}_2\text{SnCl}_2$  or  $\text{Me}_2\text{SnCl}_2$  with the Schiff bases (S2MoVaH/S4MoVaH/SBoVaH) to form a total of six new organotin(IV) compounds that had a general formula of  $[\text{R}_2\text{Sn}(\text{L})]$  (where L = Schiff base; R = Ph or Me). The molecular geometries of  $\text{Me}_2\text{Sn}(\text{S2MoVa})$ ,  $\text{Me}_2\text{Sn}(\text{S4MoVa})$  and  $\text{Me}_2\text{Sn}(\text{SBoVa})$  were established by X-ray crystallography and verified using density functional theory calculations. Interestingly, each experimental structure contained two independent but chemically similar molecules in the crystallographic asymmetric unit. The coordination geometry for each molecule was defined by thiolate-sulphur, phenoxide-oxygen and imine-nitrogen atoms derived from a dinegative, tridentate dithiocarbazate ligand with the remaining positions occupied by the methyl-carbon atoms of the organo groups. In each case, the resulting five-coordinate  $\text{C}_2\text{NOS}$  geometry was almost exactly intermediate between ideal trigonal-bipyramidal and square-pyramidal geometries. The cytotoxic activities of the Schiff bases and organotin(IV) compounds were investigated against EJ-28 and RT-112 (bladder), HT29 (colon), U87 and SJ-G2 (glioblastoma), MCF-7 (breast) A2780 (ovarian), H460 (lung), A431 (skin), DU145 (prostate), BE2-C (neuroblastoma) and MIA (pancreatic) cancer cell lines and one normal breast cell line (MCF-10A). Diphenyltin(IV) compounds exhibited greater potency than either the Schiff bases or the respective dimethyltin(IV) compounds. Mechanistic studies on the action of these compounds against bladder cancer cells revealed that they induced the production of reactive oxygen species (ROS). The bladder cancer cells were apoptotic after 24 h post-treatment with the diphenyltin(IV) compounds. The interactions of the organotin(IV) compounds with calf thymus DNA (CT-DNA) were experimentally explored using UV-vis absorption spectroscopy. This study revealed that the organotin(IV) compounds have strong DNA binding affinity, verified via molecular docking simulations, which suggests that these organotin(IV) compounds interact with DNA via groove-binding interactions.

4. Ishak NNM, Jamsari J, Ismail AZ, Tahir MIM, Tiekink ERT, **Veerakumarasivam A**, Ravooof TBSA. Synthesis, characterisation and biological studies of mixed-ligand nickel (II) complexes containing imidazole derivatives and thiosemicarbazide Schiff bases. *Journal of Molecular Structure* 2019, 1198: 126888.  
<https://doi.org/10.1016/j.molstruc.2019.126888>

**Significance of findings:** Four new mixed-ligand Ni(II) complexes (1-4) containing imidazole (im) or benzimidazole (bz) and tridentate Schiff bases derived from 2,4-dihydroxybenzaldehyde

(24D) and 4-methyl-3-thiosemicarbazide (MT24D) or 4-phenyl-3-thiosemicarbazide (PT24D) were synthesised and characterised using elemental and spectral analysis including FTIR, UV-Vis,  $^1\text{H}$  NMR,  $^{13}\text{C}$  NMR and mass spectrometry for Schiff bases, while the complexes were additionally analysed using ICP-OES, molar conductivity, magnetic susceptibility measurements and single crystal X-Ray diffraction (SXRD) analysis. Magnetic susceptibility indicated a square planar geometry for all the metal complexes while molar conductance values showed that the complexes were non-electrolytes in DMSO. The molecular geometries of the neutral complex molecule in  $[\text{Ni}(\text{MT24D})(\text{bz})](\text{bz}) \cdot \text{CH}_3\text{OH}$  (**2'**), that is **2** co-crystallised with a 1,3-benzimidazole molecule as a methanol solvate, and in the cation of  $[\text{Ni}(\text{MT24D})(\text{im})]\text{O}_2\text{CMe} \cdot 2\text{H}_2\text{O}$  (**5**), a reaction intermediate for **1**, were established by X-ray crystallography. Each featured a trans- $\text{N}_2\text{OS}$  coordination geometry defined by phenoxide-O, imine-N and thiolate-S (**2'**) or thione-S (**5**) donors as well as the imine-N donors derived from 1,3-benzimidazole (**2'**) or imidazole (**5**) molecules. Systematic variations in geometric parameters were correlated with the form of the tridentate ligand, i.e. di-anionic (**2'**) or mono-anionic (**5**). In the crystal of **2'**, supramolecular chains were sustained by hydrogen bonding and these were connected into a supramolecular layer by  $\pi \cdots \pi$  stacking interactions occurring between coordinated benzimidazole rings. In the crystal of **5**, hydrogen bonding led to a three-dimensional architecture. The Schiff bases and mixed-ligand Ni(II) complexes were tested for their cytotoxic activity, but all compounds were inactive against the MDA-MB-231 and MCF-7 breast cancer cell lines. Interestingly, the antibacterial analysis of the compounds showed that the PT24D Schiff base, Ni(MT24D)im, Ni(MT24D)bz, and Ni(PT24D)bz complexes had specific and selective activity against *Staphylococcus aureus* (*S. aureus*), *Bacillus subtilis* (*B. subtilis*), *Propionibacterium acne* (*P. acne*) and *Enterobacter aerogenes* (*E. aerogenes*). The DNA binding studies of mixed-ligand Ni(II) complexes against calf thymus DNA revealed that slight hypochromism was observed in the absorption spectra suggesting  $\pi$ - $\pi$  interactions between the aromatic chromophores and the DNA base pairs where **2** had higher  $K_b$  values than **1** thus indicating stronger interactions.

## Student Achievements

MSc student, Suganiya Rama Rao publishes her work in “The Malacologist”.

### Population genetic diversity of invasive apple snails, *Pomacea canaliculata*, in Peninsular Malaysia

**Suganiya Rama Rao**

Advised by: Dr. Yow Yoon Yen & Assoc. Prof. Dr. Shyamala Ratnayeke

MSc in Life Sciences  
Department of Biological Sciences  
School of Science and Technology  
Sunway University, Malaysia  
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#### INTRODUCTION

Invasive species are one of the key threats to global biodiversity and impose massive economic costs for their control and eradication. *P. canaliculata*, the golden apple snail, is ranked as one of the world's 100 worst invaders and has spread into multiple ponds, lakes, and agricultural wetlands especially rice fields in Malaysia. (Figs1 & 2) The first documentation of *Pomacea canaliculata* in Malaysia was in the year 1990. Also, a closely related species, *Pomacea maculata*, the island apple snail, was documented later in Peninsular Malaysia. *P. maculata* is listed as the 58<sup>th</sup> worst alien species in Europe (Nentwig *et al.* 2018). is a key element of biodiversity and allows measurement of the level of genetic variability within individuals and populations, and between populations.

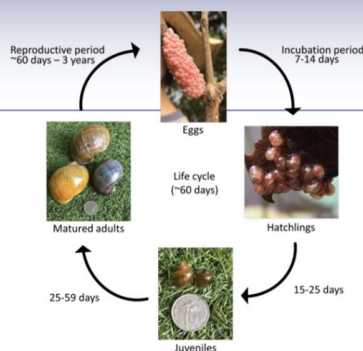


Figure 1: Life cycle of *Pomacea* spp.

Ms. Sugania who is co-supervised by AP Dr. Shyamala and Dr. Yow Yoon Yen has published her work in “The Malacologist” (The bulletin of The Malacological Society of London). This work follows a grant that she received last year from the Royal Malacological Society of London.

# Department Events

## 1. Dean's Communication Session #3

Date: 24<sup>th</sup> September 2019

Venue: LT3, Sunway University



The third Dean's communication session started with the sharing of the statistics in student enrolment within the School of Science and Technology, including a department-level breakdown. Following this, new appointments within the school were announced. These appointments include Prof. Mohamed Kheireddine, Associate Dean (Research), Prof. Abhi Veerakumarasivam, Interim Head Department of Biological Sciences, 5 faculty members, 2 senior research fellows and 2 administrative/support staff. Our dean also commented on the student barometer survey results and noted areas which could be further improved. He congratulated the school and its staff for notable achievements such as being awarded Premier Digital Tech University 2019-2021, and faculty members who received student appreciation teaching awards.

The second part of the communication session was addressed by Prof. Kheireddine. His talk focused on the research updates for the school, and he highlighted the research national and international achievements of faculty members in 2019 in terms of awards and grants received. He highlighted that we were doing well as a school in terms of number of papers published.

## 2. Student Research Seminars (Work completion seminars prior to submission of MSc thesis)

Speaker: Lee Yong Hoi (MSc student, DBS)

Date : 10th September 2019 (Tuesday)

Presentation Title: Molecular and Functional Characterization of PNMA3, an onco-neuronal antigen associated with Paraneoplastic Disorder

Speaker: Goh Tiong Keat (MSc student, DBS)

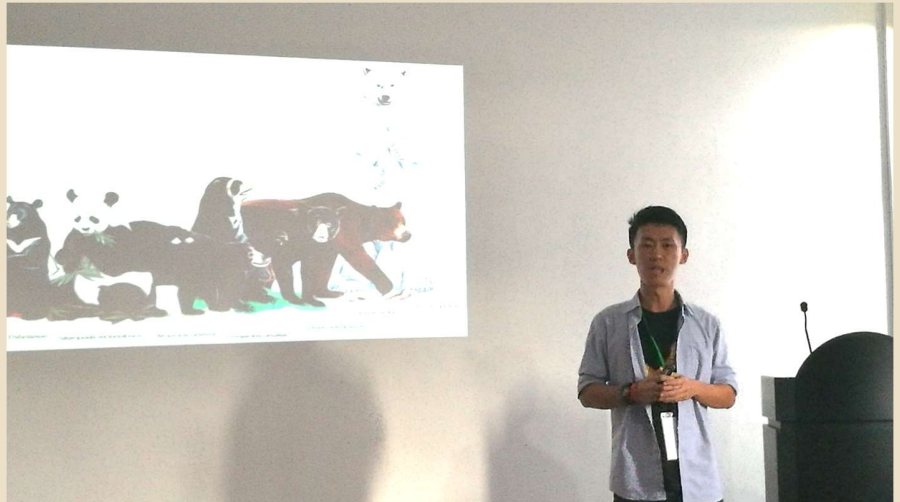
Date : 20th September 2019 (Friday)

Presentation Title: Genome-Wide Comparative Analysis of Conserved Pathways in Amoebae

# DBS members in action

## ***Dr. Ratnayeke and two of her M. Sc. Life students attend a Conference in Sri Lanka***

Dr. Ratnayeke and two of her Master's students Tee Thye Lim and Ng Wai Pak attended the Association for Tropical Biology and Conservation-Asia-Pacific Chapter Meeting which was held in Sri Lanka between September 10<sup>th</sup> to 14<sup>th</sup>, 2019. During this meeting, Dr. Ratnayeke and her students presented one poster and three oral presentations.



## ***Dr. Ratnayeke attends the 2<sup>nd</sup> International Sun Bear Symposium in Sabah with her graduate students.***



Dr. Ratnayeke was accompanied by two Master's in Life Science students, Tee Thye Lim and Lai Wai Ling in attending the 2nd International Sun Bear Symposium in Kota Kinabalu, Sabah. This symposium was held from September 25<sup>th</sup> to 26<sup>th</sup>, 2019. Two oral presentations were made by Dr. Ratnayeke's research team. Lai Wai Ling presented a talk titled "Complete mitochondrial genome and mitochondrial markers reveals divergence of sun bears (*Helarctos malayanus*) in Malaysia", while Tee Thye Lim spoke about "Noninvasive methods for estimating the population size of sun bears (*Helarctos malayanus*) in Tabin Wildlife Reserve, Sabah, Malaysia".

# Upcoming events

## 1. Inaugural Biological Science Lecture Series

We are launching the Biological Sciences Lecture Series that will provide a platform for our students, faculty and external stakeholders (including members of the public) to learn the latest developments in the field of biology, share experiences and expectations as well as develop collaborative and networking opportunities.

We have the pleasure of having Asst. Prof. Dr. Hai Dang Nguyen from the University of Minnesota Medical School (USA) to kick-start the inaugural Biological Sciences Lecture Series. Dr. Nguyen is an award-winning scientist in cancer research with a proven track record in driving innovative research in cancer research. He has 10+ years of experience; including at the Harvard University Medical School. His research focus is in DNA damage response and DNA repair, molecular biology, nucleic acid biology, and post-translational protein modification. He is also passionate in the training of future researchers and in the career development of young and emerging scientists.

You are cordially invited to attend the talk and sharing session.

Date: 4<sup>th</sup> October 2019, Friday  
Time: 5.30pm - 6.30pm  
Venue: LT4, Sunway University

For further information, please contact Dr. Kavita Reginald (email [kavitar@sunway.edu.my](mailto:kavitar@sunway.edu.my))

### Biological Sciences Lecture Series # 1



#### **Asst Prof. Dr. Hai Dang Nguyen PhD** (University of Minnesota Medical School, USA)

Dr. Nguyen is an award-winning scientist in oncology research with a proven track record in driving innovative research in cancer research. He has 10+ years of experience in DNA damage response and DNA repair, molecular biology, nucleic acid biology, and post-translational protein modification.

He is also passionate in training of future researchers and in the career development of young and emerging scientists.

You are cordially invited to attend the talk and sharing session by Dr. Nguyen, as a part of our Biological Sciences Lecture Series.

**Friday, 4<sup>th</sup> October 2019**  
**5.30 – 6.30pm**  
**LT4, Sunway University**

**Event registration:** <https://forms.gle/QmTvnP3XMK4tr9XE7>



# Upcoming events

## 2. Genetic study on allergic diseases

We are conducting the first community study within Sunway University to understand the prevalence of allergic diseases in Malaysia. This study is done in collaboration with the National University of Singapore. Data obtained from this study will also be used to analyse how genetic factors influence the manifestation of allergic diseases in our local population. Participants will receive a free allergy test (worth RM 300!) when they respond to a questionnaire, and provide biological samples (mouthwash, dead skin cells and blood). Only consenting adult participants (18 years old and above) who are not on allergy medications are eligible to participate.

This study is organized and coordinated by Dr. Kavita Reginald (Department of Biological Science - [kavitar@sunway.edu.my](mailto:kavitar@sunway.edu.my))



A joint research collaboration by

**SUNWAY UNIVERSITY**  
A CLASS ABOVE

**NUS**  
National University of Singapore

# Are you Allergic?

Not sure? Get a **FREE** allergy test to find out!

Participate\* in a Genetic Study on Acne and Allergic Diseases (SUREC2019/029)

You will be required to do the following:

- ※ Skin test for allergies
- ※ Provide mouthwash sample
- ※ Provide dead skin cells
- ※ Blood sampling
- ※ Complete a questionnaire

**FREE allergy test worth RM300++!**

**Date:** 4<sup>th</sup> – 8<sup>th</sup> November 2019  
**Time:** 9am – 5pm  
**Venue:** Art Gallery, Level 1, Sunway University;  
Function Room 2, Level 1 (only on 6th Nov)

For further queries, contact Dr. Kavita Reginald (study coordinator) by e-mail: [kavitar@sunway.edu.my](mailto:kavitar@sunway.edu.my)

\*Must be 18 years old and above, no prior participation, no needle phobia, not under allergy medication currently, able to complete all questions in the survey.

Version 5, 28 Sept 2019

## 3. Biochemical and Molecular Identification of Bacteria and Fungi

*The Department of Microbiology, Faculty of Biotechnology and Biomolecular Sciences, UPM will be conducting the 11th Microbiology Workshop on Biochemical and Molecular Identification of Bacteria and Fungi. The workshop will be held on the 29-31st October 2019.*

For further information, email to [microbeidfbsb@gmail.com](mailto:microbeidfbsb@gmail.com) ; or consult the website: <https://www.biotech.upm.edu.my>

# The Lancaster Experience

By Muhammad Esmirrafil Helmi (Bsc (Hons) Medical Biotechnology Undergraduate)



## My Lancaster Cultural Program Experience

My three weeks in Lancaster University as part of the Lancaster Cultural Exchange Programme was a truly memorable experience. I was terrified as it was my first time travelling alone. Initially, I was quiet because and very shy. But I thought to myself that if I remained in my comfort zone and be quiet for the entire trip, I will not be able to gain anything from the trip. I knew that I have to adapt and learn to be independent sooner or later, I needed to build up my confidence and learn to speak up.

Upon my arrival at the Lancaster University Campus, I went for a walk around the campus and for the first time in my life, I felt free. The beautiful Lancaster scenery made me realized that there are more to life than just studying and getting good grades. Sometimes, all you need is a short break to release stress and clear your mind. It is also important to enjoy life and appreciate the little things before it is too late.

The cultural exchange program comprises of various kinds of activities such as community engagement, educational workshop, talent showcase as well as social activities. The activities provided was all based on learning other culture and it was really interesting because it is totally

different compared to the Malaysian cultures. For example, during the community engagement, I was surprised by their responsible attitude towards the environment. They don't really rely on the street cleaners but took the initiative to keep their commune clean. I think it is something we can emulate back in Sunway University.

Through this cultural exchange program, I have learnt how to work with people from other countries and also widened my social network. From my experience, I noticed that the students in Lancaster were not shy to speak up and give their opinions. Therefore, I have decided to make some major changes in my life. I am done being quiet and shy, I will try to voice out my opinions and I will try to seize the day when the opportunity presented itself.

In conclusion, my 3 weeks visit to Lancaster was a wonderful experience and I am glad that I participated in this exchange program. It was truly a once in a lifetime experience and I am grateful to have been given the opportunity to visit such a beautiful and amazing place.

# PG STUDENT PROFILES

Ms. Salwa Mansur Ali

PhD student (Supervisor: Prof. Naveed Khan)

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## Tell us about your background

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I was born in and brought up in Karachi, Pakistan. I did my college and university level studies in Pakistan until M.Sc in Microbiology. I was very interested to do a PhD, but it was challenging to do it in Pakistan due to lack of resources and opportunities. At that time, it was generally more difficult for females to further their studies due to societal pressures. I had sent out over 80 applications internationally for PhD studentships, looking out for a good fit between my research interest and availability of a research scholarship, as I had financial concerns. I was delighted to be accepted at Sunway University with a full scholarship, working with a research project which was close to my heart, which is antimicrobial resistance.



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## What has been the impact of your research? How do you plan to take it further?

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Antimicrobial resistance is a hot area of research, as there has been a decline in the effectiveness of currently available anti-microbials due to emergence of resistance strains, and misuse of antibiotics. My target was to develop antimicrobials from novel sources – specifically from invertebrates living in polluted environments such as centipedes, tarantulas, cockroaches, lobsters and mudcrab. My hypothesis was if those organisms were able to survive and thrive for generations despite of the routine exposure to extreme levels of disease causing agents, they would likely have a built-in immune mechanism to counter-act these threats. Among the key findings from my research was the identification of several active metabolites from the Chinese Red Headed centipede. These metabolites could kill drug resistant bacteria such as methicillin resistant *Staphylococcus aureus* (MRSA) and neuropathogenic *E. coli* at low test concentrations, and were not found to be toxic in human cell lines. The next step would be to test these metabolites for safety and efficacy using an *in vivo* system and clinical trials. If proven safe and effective, these compounds would be a safer and more effective option for treating drug-resistant microorganisms that are especially plaguing the developing nations.

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## What do you like about being in Sunway University?

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I've learnt a lot. It has not only trained me in my PhD studies, but also other aspects such as time management, patience, working in a group, and dealing with different individuals. I was also happy to be financially independent due to the scholarship by Sunway University, and this made my parents proud of me. I learnt how to juggle different tasks, but I was positively supported by my supervisors, team members and family. It was a great experience overall.

*Please share your updates (publications, events, funding) via [this link](#) by the 25<sup>th</sup> of each month, to be published in the up-coming bulletin.*

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If there is one thing that could be improved within the Department, what would it be?

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It would be great if after graduating from Sunway University, I, as an international student could also have job opportunities within Sunway University, or its affiliates to help me to further my professional development. Otherwise, it is challenging for international students to get jobs in Malaysia.

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What are your plans after graduation?

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I see myself working in prestigious organizations where I could continuously further my research skills – either in microbiology or other related fields – as I like to learn new skills and areas of science. I would also like to teach, so perhaps something that combines both teaching and research would be ideal for me.

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Tell us something unique about yourself

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I would say I am very adaptable to new environments. I'm also very determined – Once I've decided to do something, I will see it through no matter the challenges laid out in front of me.

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Do you have a message for PG students?

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Try to be patient during your studies as there would be many hurdles during your graduate studies. Take time and effort to explore innovative ideas. Be humble as not many get the opportunity to further their studies. Also, be sincere in doing your work.

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Anything funny stories / crazy experiences during your time in Sunway University?

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I used to be afraid of cockroaches. I needed to put them in ice before injection so that they are immobilized. Once, the cockroaches became active before I had the chance to inject them, and started moving around, and this scared the other students in the lab!

I even had students wanting to take selfies with my cockroach cages! It was fun though!

