



Spontaneous group picture taken at the start of the SST staff retreat at Genting Highlands.

Research

Recent Publications

1. Ali SM, Khan NA, Sagathevan K, Anwar A & Siddiqui R. Biologically active metabolite(s) from haemolymph of red-headed centipede *Scolopendra subspinipes* possess broad spectrum antibacterial activity. AMB Express, Volume 9, Article number: 95 (2019).

<https://amb-express.springeropen.com/articles/10.1186/s13568-019-0816-3>

Significance of findings: The discovery of novel antimicrobials from animal species under pollution is an area untapped. Chinese red-headed centipede is one of the hardiest arthropod species commonly known for its therapeutic value in traditional Chinese medicine. Here we determined the antibacterial activity of haemolymph and tissue extracts of red-headed centipede, *Scolopendra subspinipes* against a panel of Gram-positive and Gram-negative bacteria. Lysates exhibited potent antibacterial activities against a broad range of bacteria tested. Chemical characterization of biologically active molecules was determined via liquid chromatography mass spectrometric analysis. From crude haemolymph extract, 12 compounds were identified including: (1) l-Homotyrosine, (2) 8-Acetoxy-4-acoren-3-one, (3) N-Undecylbenzenesulfonic acid, (4) 2-Dodecylbenzenesulfonic acid, (5) 3H-1,2-Dithiole-3-thione, (6) Acetylenedicarboxylate, (7) Albuterol, (8) Tetradecylamine, (9) Curcumenol, (10) 3-Butylidene-7-hydroxyphthalide, (11) Oleoyl Ethanolamide and (12) Docosanedioic acid. Antimicrobial activities of the identified compounds were reported against Gram-positive and Gram-negative bacteria, fungi, viruses and parasites, that possibly explain centipede's survival in harsh and polluted environments. Further research in characterization, molecular mechanism of action and in vivo testing of active molecules is needed for the development of novel antibacterials.

2. Nimmo IC, Barbrook AC, Lassadi I, Chen JE, Geisler K, Smith AG, Aranda M, Purton S, Waller RF, Nisbet RER, and Howe CJ. Genetic transformation of the dinoflagellate chloroplast. eLife 2019;8:e45292 doi: 10.7554/eLife.45292

<https://doi.org/10.7554/eLife.45292.001>

Significance of findings: Coral reefs are some of the most important and ecologically diverse marine environments. At the base of the reef ecosystem are dinoflagellate algae, which live symbiotically within coral cells. Efforts to understand the relationship between alga and coral have been greatly hampered by the lack of an appropriate dinoflagellate genetic transformation technology. By making use of the plasmid-like fragmented chloroplast genome, we have introduced novel genetic material into the dinoflagellate chloroplast genome. We have shown that the introduced genes are expressed and confer the expected phenotypes. Genetically modified cultures have been grown for 1 year with subculturing, maintaining the introduced genes and phenotypes. This indicates that cells continue to divide after transformation and that the transformation is stable. This is the first report of stable chloroplast transformation in dinoflagellate algae.

3. Macdonald DW, Bothwell HM, Kaszta Z, Ash E, Bolongon G, Burnham D, Can OE, Campos-Arceiz A, Channa P, Clements GR, Hearn AJ, Hedges L, Htun S, Kamler JF, Kawanishi K, Macdonald EA, Mohamad SW, Moore J, Naing H, Onuma M, Penjor U, Rasphone A, Rayan DM, Ross J, Singh P, Tan CKW, Wadey J, Yadav BP and Cushman SA. Multi-scale habitat modelling identifies spatial conservation priorities for mainland clouded leopards (*Neofelis nebulosa*). Diversity and Distributions. 2019;00:1-16.

<https://doi.org/10.1111/ddi.12967>

Significance of findings: Aim: Deforestation is rapidly altering Southeast Asian landscapes, resulting in some of the highest rates of habitat loss worldwide. Among the many species facing declines in this region, clouded leopards rank notably for their ambassadorial potential and capacity to act as powerful levers for broader forest conservation programmes. Thus, identifying core habitat and conservation opportunities are critical for curbing further *Neofelis* declines and extending umbrella protection for diverse forest biota similarly threatened by widespread habitat loss. Furthermore, a recent comprehensive habitat assessment of Sunda clouded leopards (*N. diardi*) highlights the lack of such information for the mainland species (*N. nebulosa*) and facilitates a comparative assessment.

Location: Southeast Asia.

Methods: Species-habitat relationships are scale-dependent, yet <5% of all recent habitat modelling papers apply robust approaches to optimize multivariate scale relationships. Using one of the largest camera trap datasets ever collected, we developed scale-optimized species distribution models for two con-generic carnivores, and quantitatively compared their habitat niches.

Results: We identified core habitat, connectivity corridors, and ranked remaining habitat patches for conservation prioritization. Closed-canopy forest was the strongest predictor, with ~25% lower *Neofelis* detections when forest cover declined from 100 to 65%. A strong, positive association with increasing precipitation suggests ongoing climate change as a growing threat along drier edges of the species' range. While deforestation and land use conversion were deleterious for both species, *N. nebulosa* was uniquely associated with shrublands and grasslands. We identified 800 km² as a minimum patch size for supporting clouded leopard conservation.

Main conclusions: We illustrate the utility of multi-scale modelling for identifying key habitat requirements, optimal scales of use and critical targets for guiding conservation prioritization. Curbing deforestation and development within remaining core habitat and dispersal corridors, particularly in Myanmar, Laos and Malaysia, is critical for supporting evolutionary potential of clouded leopards and conservation of associated forest biodiversity.



Department Events

1. SST staff retreat

Date: 6th - 7th July 2019

The 2019 SST staff retreat took place in the Grand Ion Delemen Hotel at Genting Highlands. It was a great opportunity for academic and administrative staff from the departments and research centers under the School of Science and Technology to spend time getting to know each other and building new connections.

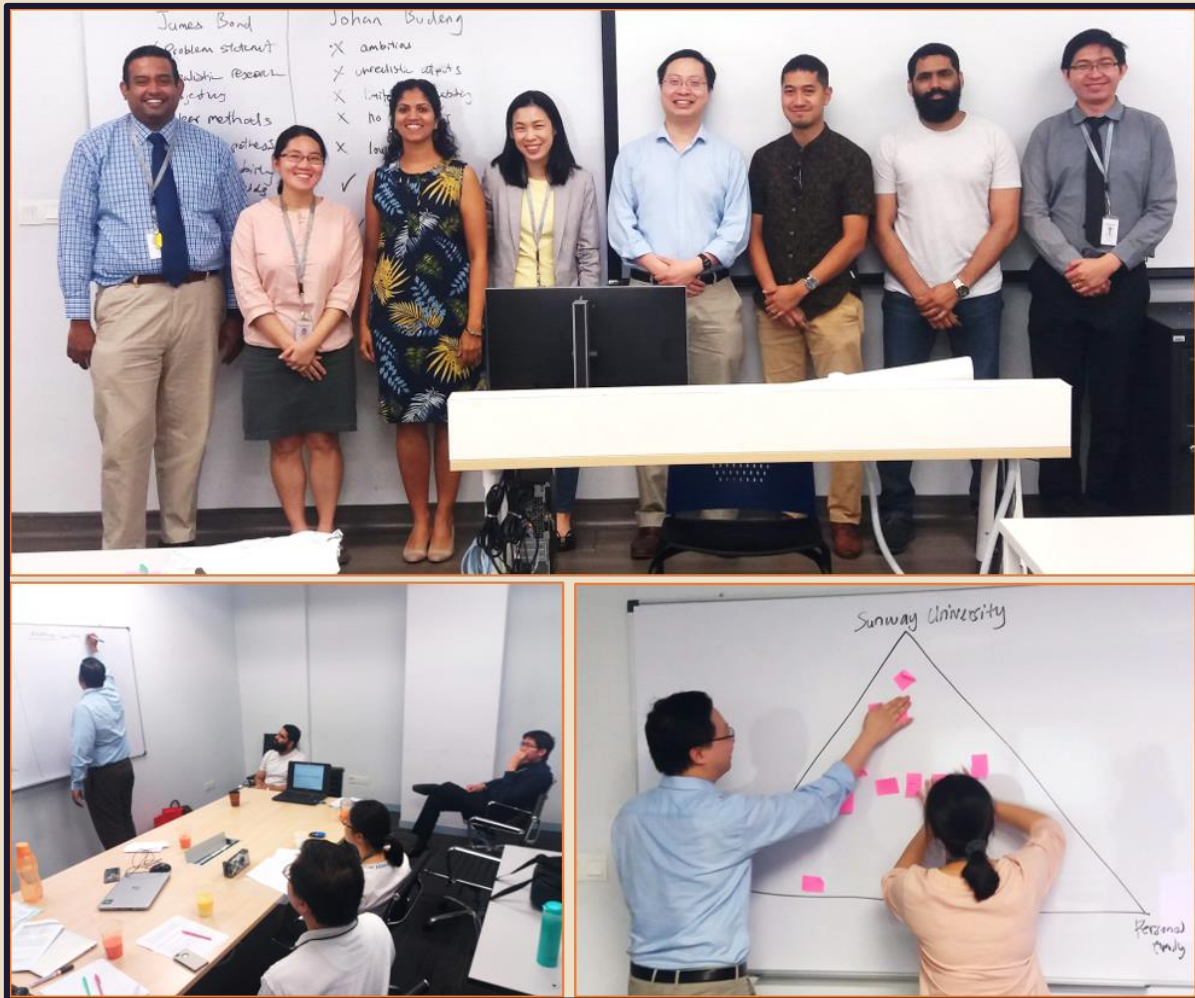


Department Events

2. Grant writing workshop

Date: 24th - 25th July 2019

A two-day grant writing workshop was conducted for the faculty members of DBS. Prof Abhi conducted most of this workshop, supported by A/P Dr. Reuben. This workshop focused on practical examples and hands on practices on how to write better grants applications.



3. Sunway University Graduation

Date: 26th July 2019

We congratulate the graduating cohort of July 2019. Four students graduated with distinction with Master of Science in Life Sciences. For the degree programs, six students graduated with BSc (Hons) Biology with Psychology degree, with one obtaining First Class, three obtaining Second Class (Division I) and two with Second Class (Division II). Eighteen students graduated with BSc (Hons) Medical Biotechnology degrees, with 5 obtaining First Class, 6 obtaining Second Class (Division I), 6 obtaining Second Class (Division II) and one obtaining Third Class.

DBS members in action

Dr Chen appointed as an affiliate of YSN-ASM,

Dr. Chen was appointed as an affiliate of YSN-ASM for a one-year term until 30th April 2020. This appointment was confirmed by the YSN-ASM Executive Council on the 30th April 2019. Congratulations!

Dr. Kavita participates as a trainer in the “Teenage Reproductive Health Education” program.

Dr. Kavita participated in the Teenage Reproductive Health Education program (Pendidikan Kesihatan Reproductive Remaja, as an expert health-trainer held on 17th July 2019. This program was a joint initiative between the medical doctors in The Cheras Batu 9 Health Clinic and the local council of the same district. This program was involved approximately 200 students aged between 13-15 years old in Sekolah Menengah Perimbun. Students were given short seminars and were involved in short activities to improve their awareness on reproductive health, with an aim to reduce the incidence of teenage pregnancies.



Research

Funding opportunities

1. Newton Fund Impact Scheme (NFIS)

NFIS provides funding for current and previously funded Newton Fund grantees with the aim of maximising impact from Newton Fund activities. The collaboration between UK and partner countries can build upon the original partnership or form a new partnership. Malaysia is one of the eligible partners for the 2019 call.

Quick facts: Award of GBP 150,000 for 12-18 months.

Deadline: 13 September 2019, 1600 UK time.

How to apply: Online at <https://www.britishcouncil.org/education/science/current-opportunities/newton-fund-impact-scheme>

Upcoming Events

1. The 1st Euro-Asia Conference on CO₂ Capture and Utilisation 2019 (EACCO₂CU 2019).

Students and staff members are cordially invited to participate in the 1st Euro-Asia Conference on CO₂ Capture and Utilisation 2019 (EACCO₂CU 2019) to be held in Sunway University, Selangor, Malaysia on 6-7th August 2019. In addition to the conference, a 1-day post-conference workshop will be organised on the 8th August 2019.

EACCO₂CU 2019 was inspired by the successful workshop on CO₂ Capture and Utilisation that was organised by University of Malaya, Universiti Malaysia Perlis and Queen's University Belfast on 6-8 February 2017 in Kuala Lumpur within the framework of an International Project, involving the three Universities, and funded by the British Council under Newton Institutional Links program. This year, EACCO₂CU 2019 will be organised by Sunway University aiming to bring researchers, academicians, industry players and policymakers from Europe and Asia working on CO₂ related research to share recent trends and developments in the field of CO₂ mitigation and utilisation and to discuss the challenges and opportunities toward achieving SDG13 on climate change. The conference will cover a wide range of hot topics ranging from fundamental aspects to applications and industrial case studies.

Conference URL: <https://my.sunwayu.edu.my/eacco2cu/>

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

Upcoming Events

2. International Conference on Industry 4.0: A Global Revolution in Business, Technology and Productivity

SEGi University in collaboration with multiple Government Agencies, GLCs and private sectors is organizing an “International Conference on Industry 4.0: A Global Revolution in Business, Technology and Productivity” (www.myindustries.org) from 5th- 7th September 2019 at SEGi University, Kota Damansara, Selangor.

This mega Conference is to be officially opened by YB Tun Dr. Mahathir bin Mohammad who would also deliver the Keynote address. The Conference offers academic tracks in multi disciplines. Attached please find copy of the areas suggested for academic presentations. The conference consequently offers academics an opportunity to publish in Scopus journals. The list of journals which have agreed to publish our papers is also attached for your perusal.

More information: www.myindustries.org

3. 27th FAOBMB & 44th MSBMB Conference

The 27th FAOBMB Conference will have the general theme of “Biomolecules: Networks & Systems” with a Special Symposium on “Mosquito-borne illnesses”. We have put together an excellent scientific programme with eminent speakers, forums for Career Development, Education and Women in Science and pre- and post-conference workshops providing networking opportunities for all delegates.

Conference date: 19th - 22nd August 2019

Venue: Berjaya Times Square Hotel

More information: www.faobmkl2019.com

DBS Research Seminars

2nd July

1. Shareni Jeyamogan (PhD candidate) - “Animals living in polluted environments are a potential source of anticancer molecule(s)”.
2. Noor Akbar (PhD candidate) - “Gut bacteria of animals/pests are potential source of antibacterial molecule(s)”
3. Kavitha Rajendran (PhD candidate) - “Development of Chemotherapeutical Treatments Against Primary Amoebic meningoencephalitis (PAM) caused by the *Naegleria Fowleri*”

12th July: Chan Yanqi (MSc candidate) - “Development of tetravalent synthetic peptide dengue vaccine using nanoparticles as vaccine delivery”

15th July: Madiiha Bibi Mandary (MSc candidate) - “Impact of Spontaneous Mutation of Enterovirus 71 (EV-A71) on Virulence”