

• **BIOCHEMISTRY** •

BUZZ

ISSUE #28
December
2017



Department of Biochemistry
Yong Loo Lin School of Medicine

Table of Contents

HOD's Message

1

Staff Awards

2

Research Discovery

3

Grant Awards

4

Department Awards

6

Student Awards

7

Student Conferment

8

New Students

9

New Staff

11

Travel Fellowship

13

Events

CSR - Mangrove

18

SB7.0

21

90th Anniversary

23

Terrarium Workshop

26

Safety Tea

28

Retirement Lunch for Aunty

30

Research Publications

Farewell

31

35

HOD's Message

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Staff Awards

Dr Long Yun Chau

has been awarded the **Faculty of Dentistry – Excellence in Teaching Award AY2016/2017**

has been awarded the **Faculty of Science – Teaching Excellence Award AY2016/2017**



A/P Thilo Hagen

has been awarded the **Faculty of Science – Teaching Excellence Award AY2016/2017**



MiRXES Pte Ltd, led by A/P Too HP, Dr Zhou Lihan & Dr Zou Ruiyang

has been awarded the **Scientist-Entrepreneur Award** at the A*STAR Workplan Seminar 2017 [Link](#)



A/P Maxey Chung

is appointed the **Deputy Chair, Medical Sciences Cluster** from 1 June 2017 – 30 June 2018



A/P Gan Yunn Hwen

reappointed as the **Chairperson in the NUS Medicine Research Awards Committee** from 1 September 2017 for a period of 2 years



A/P Tang Bor Luen

reappointed as a member in the **NUS Medicine Research Awards Committee** from 1 September 2017 for a period of 2 years

is appointed as **Deputy Director for Research Compliance and Research Integrity** in the Office of Deputy President (Research & Technology) from 1 January 2018 to 31 July 2019



Dr Yvonne Tay

has been shortlisted as one of the finalist to compete for the **L’Oreal Singapore for Women in Science National Fellowship 2017**



Research Discovery

It's in the blood

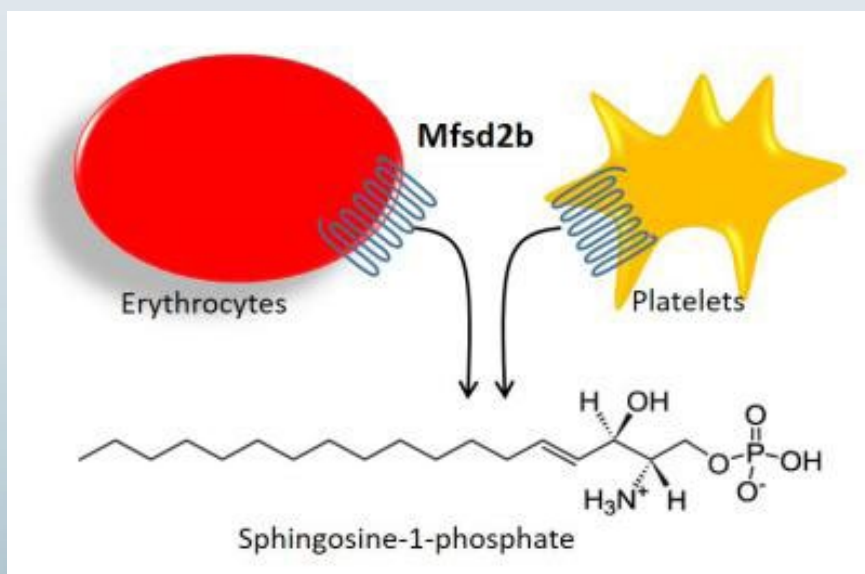
Biochem researchers unveil a new mystery in our blood cells

Our blood cells are important for gas delivery and immune functions. Surprisingly, some of these blood cells also release a chemical signal called Sphingosine-1-phosphate (S1P) to regulate the circulation network and immune cell trafficking. In a fruitful collaboration with our HoD laboratory Prof Markus Wenk, Dr Nguyen and his team have discovered the way that these cells release out S1P for its signalling roles. This study was published in Nature on 18 October 2017.

In the breakthrough study, they found that the absence of a transport protein namely, Mfsd2b, is related to low levels of S1P in the blood. This resulted in abnormally low numbers of T and B cells, and increased sensitivity to anaphylactic shock, a severe allergic reaction. Their breakthrough findings pave the way for the manipulation of S1P levels in the blood for the treatment of inflammatory and vascular diseases. The team also found that a lack of Mfsd2b is linked to low red blood cell counts and sensitivities to chemotherapy and radiotherapy. This suggests that increasing plasma S1P levels could be beneficial to cancer patients receiving chemotherapy and radiotherapy treatments.

The discovery was made possible thanks to the collaborative research environment in Biochemistry. We hope to see more of this in the future.

Media source: https://www.eurekalert.org/pub_releases/2017-10/nuos-nrd102317.php



Caption

This is in image of Sphingosine-1-phosphate produced in erythrocytes and platelets is transported out of the cells into the blood by the Mfsd2b protein.

Credit

Dr Long N. Nguyen

Grant Awards

June 2017 - December 2017

Wilmar Award

\$ 6,000,000

Industry Alignment Fund – Industry Collaboration Projects (IAF-ICP)
WIL@NUS JointLaboratory
A/P Matthew Chang & A/P Yew Wen Shan

MOE Tier 2

\$ 756,612

Role of MLL5 Regulating Photoreceptor Gene Expression and Retinal Function
A/P Deng Lih Wen

SMART Innovation Project

\$245,000

A Novel Transfection Method For Scalable and Cost Effective Viral Production
A/P Too Heng-Phon

CoSTAR-HS ARG

\$50,000

Profiling colonization and virulence potential of CaPES isolates
A/P Gan Yunn Hwen

Synthetic Biology Research & Development Project (SBP)

\$2,660,000

Analytical support to enhance the Synthetic Biology Research & Development Programme
Professor Markus Wenk

\$2,496,566.67

Synthetic Biology Research & Development Project (SBP)

Development of a Microbial Platform for the Production of Odd-Chain Fatty Acids
A/P **Matthew Chang**

\$ 5,960,050

Synthetic Biology Research & Development Project (SBP)

Synthetic Cannabinoid Biology: Repurposing Nature for Tomorrow's Therapeutics
A/P **Yew Wen Shan**

NUSMed Post-Doctoral Fellowship

Single Cell Genomic Analysis for Identification of Relapse Mechanisms in Leukemia
Supporting Researcher: **To be identified**
Dr Kenneth Ban

NUSMed Post-Doctoral Fellowship

Development and Characterization of Preclinical Disease Models for Dilated Cardiomyopathy Caused by Pathological Variants in LMNA gene
Supporting Researcher: **Tan Chia Yee**
Dr Jiang Jianming

NUSMed Post-Doctoral Fellowship

Targeting S1P transport for treatment of diseases
Supporting Researcher: **Vu Minh Thiet**
Dr Nguyen Nam Long

Department Awards

MD7 has been awarded Platinum Award for the Fire Safety Excellence Award 2017

The XXI World Congress on Safety & Health at Work 2017

The Department of Biochemistry won the Outstanding Safety Video prize for the 2016 inaugural NUSMed Safety Day. The video, entitled “Safety Begins With Me”, was submitted by the Lab Safety Video Team to the International Media for Prevention (IMFP) which is the Oscars Awards equivalent for safety. IMFP is an integral part of the XXI World Congress on Safety and Health at Work 2017 and was held at the Marina Bay Sands Expo and Convention Centre, Singapore on 3-6 September 2017. A total of 235 submissions from 38 different countries and the “Safety Begins With Me” video was one of the 38 films and 10 multimedia products that were shortlisted and nominated as a winning entry (a total of 9 winning entries were selected). Two members of the Lab Safety Video Team were given free conference passes to attend the IMFP Award Ceremony and the XXI World Congress on Safety and Health at Work 2017 Conference. Although the video was not selected as a winning video, it was a great experience to watch and learn from the winning videos and other nominated videos.

Department's safety video
has been shortlisted for The XXI World Congress on
Safety & Health At Work 2017
by The International Media Festival
for Prevention (IMFP)



International Media Festival for Prevention
Singapore 2017

XXI WORLD CONGRESS ON
SAFETY & HEALTH
AT WORK 2017
3-6 September 2017
Sands Expo and Convention Centre, Singapore



Student Awards

**Best UROPS Student Award
for Academic Year 2016/2017**

Ms Bianche Lim Yi Lei

Supervisor: A/P Yew Wen Shan

Best UROPS Student Award offers a cash prize of **\$200** to the best student in Life Science who does UROPS with Department of Biochemistry.

**SSBMB & Biochemistry
Honours Book Prize
for Academic Year 2016/2017**

Ms Wang Xinyi

Supervisor: A/P Deng Lih Wen

Biochemistry Honours Book Prize offers a cash prize of **\$400** awarded to first class (highest distinction) honours with the highest FYP score.

Singapore Society for Biochemistry and Molecular Biology Prize (SSBMB)

The Singapore Society for Biochemistry and Molecular Biology offers a cash prize of \$150 to the best student in Life Sciences with concentration in Biomedical Science or Molecular and Cell Biology in the Examination for the degree of Bachelor of Science with Honours.

Student Conferment

Main Supervisor:
Dr Chen Ee Sin
Co-Supervisor:
A/P Tan Tin Wee
Conferred Date:
31/08/2017

**NGUYEN
THI THUY
TRANG,
MSc**

**TAN BING
QUAN
JUSTIN,
MSc**

Main Supervisor:
A/P Too Heng-Phon
Conferred Date:
31/05/2017

Main Supervisor:
A/P Song Zhiwei
Conferred Date:
31/03/2017

**CHAN
KAH FAI,
PhD**

**CHAN HUI
SHAN
CHRISTINE,
PhD**

Main Supervisor:
A/P Too Heng-Phon
Conferred Date:
31/07/2017

Main Supervisor:
A/P Tan Tin Wee
Co-Supervisor:
Dr Tong Joo Chuan
Conferred Date:
31/10/2017

**ENG LOAN
PING,
PhD**

**HABIBA
ZORGATI,
PhD**

Main Supervisor:
A/P Robert Charles
Robinson
Conferred Date:
31/10/2017

Main Supervisor:
Professor Ng Huck Hui,
Co-Supervisors:
Dr Wu Qiang; Dr Liu Jianjun
Conferred Date:
30/06/2017

**HOANG-DAI
TRAN,
PhD**

**SWEELIN
CHEW,
PhD**

Main Supervisor:
Professor Ellen Birgitte
Lane
Co-Supervisor:
A/P Sohail Ahmed
Conferred Date:
31/10/2017

Main Supervisor:
Dr Wang Mei
Co-Supervisor:
Professor Patrick J Casey
Conferred Date:
31/08/2017

**ZHU WAN
LONG,
PhD**



New Students

**Chan Geck
Nghoh**

MSc



Main Supervisor:
Dr Nguyen
Nam Long
Co-Supervisor:
Professor Markus
Wenk

Tan Yi Han

MSc



Main Supervisor:
A/P Gan Yunn
Hwen
Co-Supervisor:
Dr Chng Shu Sin

Gozde Zafer

PhD



Main Supervisor:
A/P Philipp Kaldis
Co-Supervisor:
A/P Thilo Hagen

**Kevin Lim Jie
Han**

PhD



Main Supervisor:
A/P Yew Wen Shan

Loh Hui Mun

PhD



Main Supervisor:
Professor Hong
Wanjin

**Maanasa
Ravikumar**

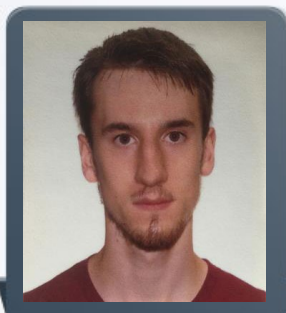
PhD



Main Supervisor:
Dr Lim Chin Yan
Co-Supervisor:
A/P Caroline Lee

**Robert Alan
Jappy Tucker**

PhD



Main Supervisor:
Professor Barry
Halliwell

**Udayappan
Udhaya Kumari**

PhD



Main Supervisor:
Dr Wang Mei
Co-Supervisor:
A/P Caroline Lee



New Staff



Professor Brian Kennedy
Distinguished Professor
RO : Professor Markus Wenk
Date joined : 03-07-2017



Chow Jeng Yeong
Senior Research Fellow
RO : A/P Yew Wen Shan
Date joined : 17-08-2017



Peter Imre Benke
Senior Research Fellow
RO : Dr Federico Tesio Torta
Date joined : 15-09-2017



Angad Rao
Research Fellow
RO : Dr Lim Yoon Pin
Date joined : 13-11-2017



Gajendra Azad Kumar
Research Fellow
RO : Professor Brian Kennedy
Date joined : 06-11-2017



Guan Shou Ping
Research Fellow
RO : Professor Brian Kennedy
Date joined : 01-11-2017



Wen Ke Yan
Research Fellow
RO : A/P Matthew Chang
Date joined : 19-06-2017



Jeremy John Selva
Research Assistant
RO : Dr Federico Tesio Torta
Date joined : 07-08-2017



Kemas Aurino Muhammad
Research Assistant
RO : A/P Matthew Chang
Date joined : 06-07-2017



Li Yongling Adelia
Research Assistant
RO : Dr Chen Ee Sin
Date joined : 18-08-2017

New Staff



Madhuvanthy Chandrakanthan
Research Assistant
RO : Dr Nguyen Nam Long
Date joined : 08-05-2017



Siti Nabilah Binte Hamidah
Research Assistant
RO : Professor Brian Kennedy
Date joined : 13-11-2017



Wisna Novera
Research Assistant
RO : A/P Deng Lih Wen
Date joined : 06-09-2017



Lee Zheng Wei
Teaching Assistant
RO : A/P Yeong Foong May
Date joined : 04-09-2017



Kuek Huifang
Operations Associate
RO : Ms Long Lee Hua
Date joined : 17-07-2017



Nguyen Lan Huong
Research Assistant
RO : A/P Matthew Chang
Date joined : 15-09-2017



Tong Yi Sheng Juztin James
Research Assistant
RO : A/P Yew Wen Shan
Date joined : 04-08-2017



Wu Hui
Research Assistant
RO : A/P Deng Lih Wen
Date joined : 27-11-2017



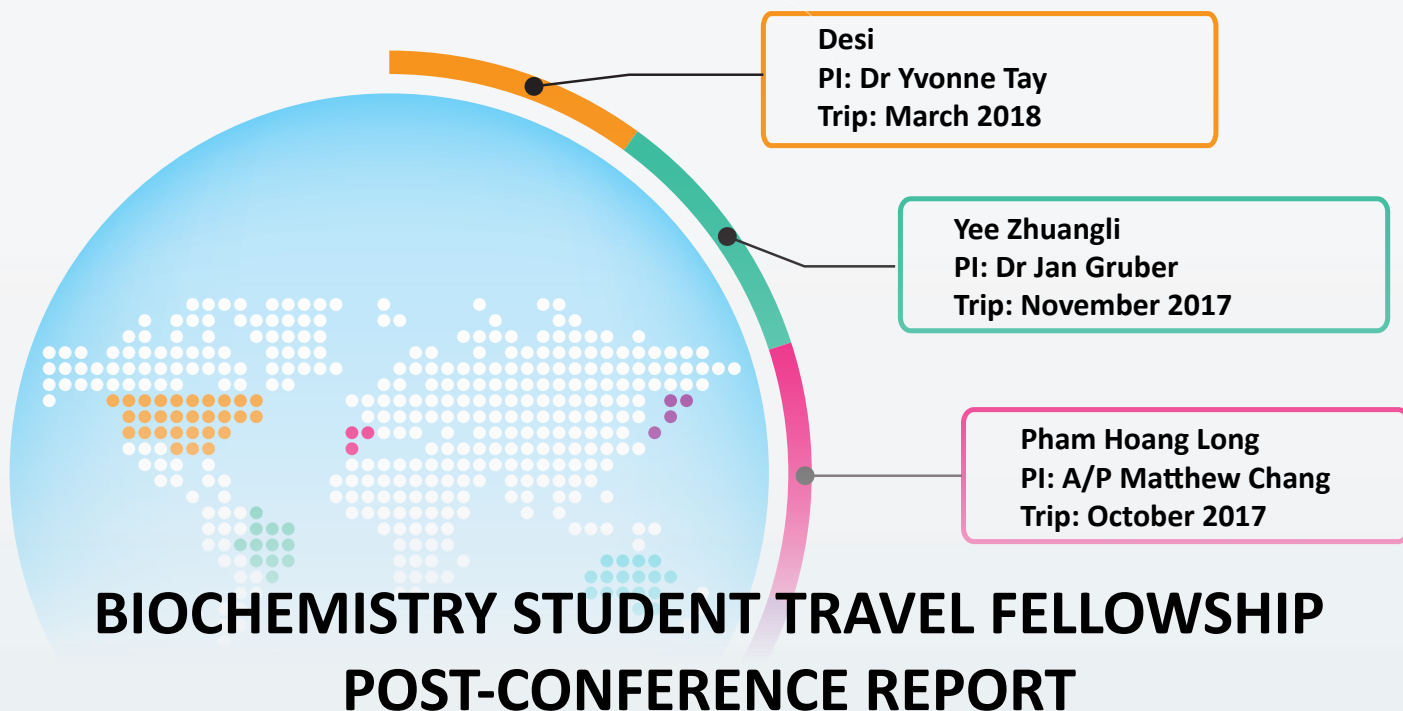
Chan Pui Shi
Laboratory Technologist
RO : Dr Jiang Jianming
Date joined : 29-05-2017



Siti Badariah
Operations Associate
RO : Ms Long Lee Hua
Date joined : 08-05-2017

Travel Fellowship

For the July 2017 Call, 3 students below were awarded :



Mr Pham Hoang Long

Conference:
Metabolic Engineering Summit 2017
Date: 22-24 Oct 17
Location: Beijing, China

Website:
<http://me2017.csp.escience.cn/dct/page/1>



Photo 1. Group photo of MES 2017 conference.

The **Metabolic Engineering Summit 2017 (MES2017)** is a premier conference bringing together leading experts, scientist and students from industry, the government and academia to present and discuss cutting edge research in the field of metabolic engineering. Approximately 500 participants from leading universities worldwide (US, UK, Korea, and other countries) and 100 posters were present and the conference. The entire conference was hosted at at Zhongjia Palace Hot-spring Hotel in Beijing, where participants attend all the lectures, poster sessions, and meals together from 8.30 am to 9pm. This close format greatly facilitated intellectual exchange and encourage discussions among the audience.

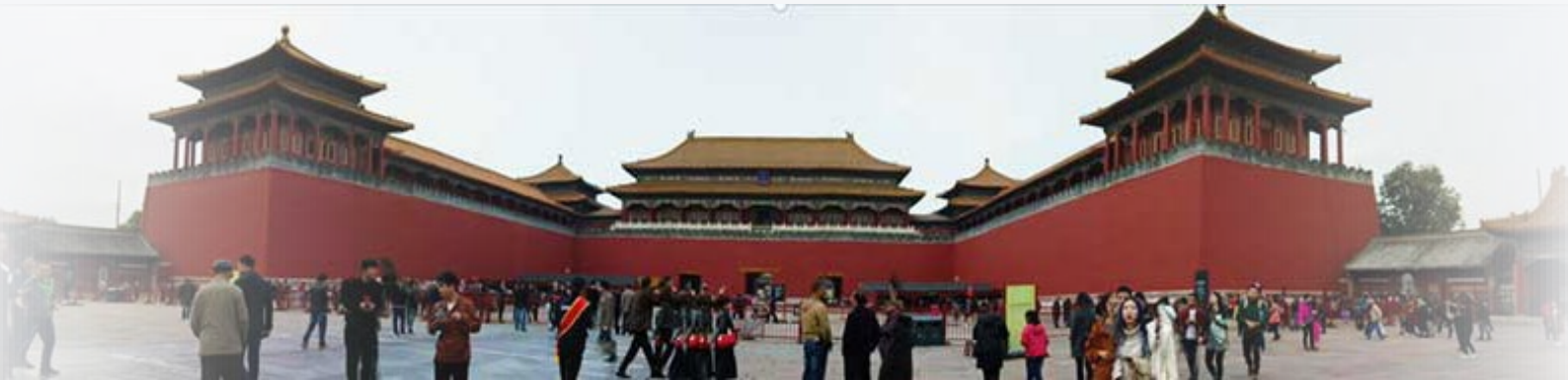


Photo 2. A corner of Tiananmen square, in the central area of Beijing, China.

The key highlight of the conference was the stimulating discussions about critical elements of 21st century bio-industry and how future metabolic engineering projects can contribute to this grand vision. More specifically, there is a rising excitement about new developments to efficiently utilize common gases (CO_2 , O_2 , H_2) as starting materials to produce more complex and valuable products.

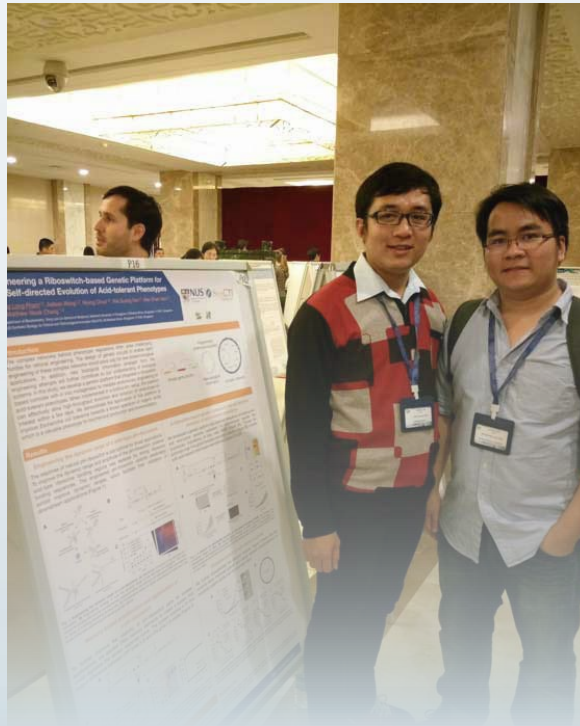


Photo 3. NUS poster presented at MES 2017.

From a personal perspective, MES2017 provided me an exciting opportunity to present and discuss my recently published work in Nature Communications with international colleagues and leading experts in the field. This inspired me with several new ideas to pursue for future development of my PhD projects, and also allowed me to discuss potential collaboration with fellow PhD students from other laboratories in the field. Interestingly, I also learned about new job opportunities at China, both in academia and industry, which help benefit me greatly for future plans

MES 2017 Abstract

Engineering a Riboswitch-based Genetic Platform for the Self-directed Evolution of Acid-tolerant Phenotypes

Hoang Long Pham^{1,2}, Adison Wong^{1,2}, Matthew Wook Chang^{1,2}

¹ Department of Biochemistry, Yong Loo Lin School of Medicine, National University of Singapore, 8 Medical Drive, Singapore 117597, Singapore

² NUS Synthetic Biology for Clinical and Technological Innovation, Life Sciences Institute, National University of Singapore, 28 Medical Drive, Singapore 117456, Singapore

Environmental pH is a fundamental signal continuously directing the metabolism and behavior of living cells. Programming the precise cellular response towards environmental pH is therefore crucial in engineering cells for increasingly sophisticated functions. Herein, we engineered a set of pH-riboswitch parts with diverse dynamic range to enable gene expression control according to differential environmental pH. We next applied the pH-riboswitch to regulate DNA integrase to construct a digital pH-sensing system that enables high-resolution recording of host cell exposure to discrete external pH levels. Finally, the digital pH-sensing system was coupled with error-prone DNA polymerase in a genetic program that autonomously regulates the evolutionary engineering of host cells for improved tolerance to a broad spectrum of organic acids, a valuable phenotype for metabolic engineering and bioremediation applications. To our knowledge, our study presents for the first time a generic platform that integrates a riboswitch-based controller with *in vivo* mutagenesis to mediate the evolutionary engineering of desirable phenotypes in *E. coli*. We envision that the riboswitch design principles and experimental framework presented herein can be broadly applied to develop valuable phenotypes for industrial biotechnology applications.

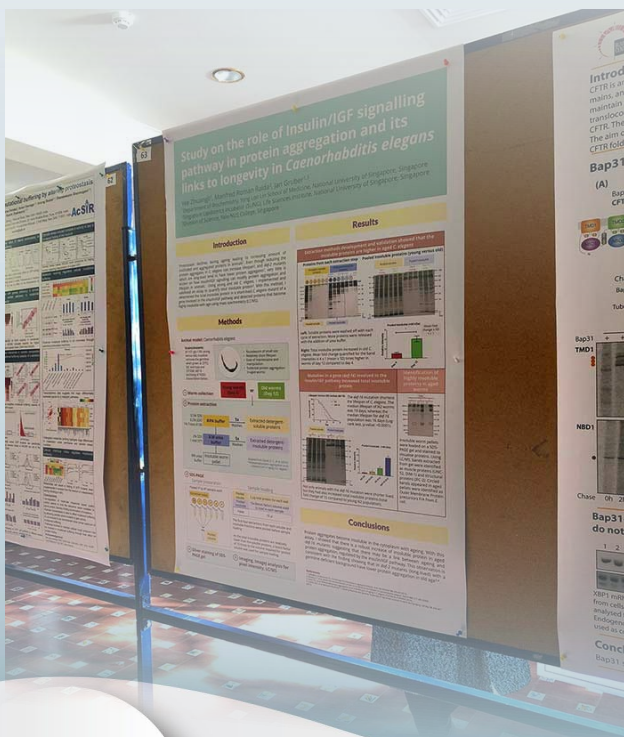


Mr Yee Zhuangli

Conference:
EMBO – Proteostasis
Date:
17-21 Nov 2017
Location:
Ericeira, Portugal

Thanks to the funding provided, I had the opportunity to travel to Europe for the first time and experienced the beauty of a small-sized meeting. The invited speakers seemed to have known each other personally or have met on many different occasions. I am glad that I have chosen this conference, as I testified the excitement of a small network of people who are likeminded and came together to talk about their specific interests in science. For this conference, it is about proteostasis. I caught a snapshot of the most current research directions from the talks and gained insights into novel problems the researchers are trying to solve. The sharing of knowledge was fascinating, and particular serendipitous findings had inspired to be more observant in my work. The organisers made a great effort to ensure the presentations clustered in each session were relevant and flowed smoothly. I had a remarkable chance to present my work and interact with the experts and fellow students in the proteostasis field. Their advice and suggestions would be valuable inputs to develop my thesis.

My Poster



Booklet/goodie bag/name tag for this conference and the schedule for other EMBO events



Proteostasis

17 - 21 November 2017 | Ericeira, Portugal

Study on the role of Insulin/IGF signalling pathway in protein aggregation and its links to longevity in *Caenorhabditis elegans*

Yee Zhuangli¹, Manfred Roman Raida², Jan Gruber^{1,3}

¹Department of Biochemistry, Yong Loo Lin School of Medicine, National University of Singapore, Singapore

²Singapore Lipidomics Incubator (SLING), Life Sciences Institute, National University of Singapore, Singapore

³Division of Science, Yale-NUS College, Singapore

Proteostatic mechanisms decline with age in *C. elegans* and protein aggregation may be

involved in ageing. While interventions such as reducing transcripts of genes coding for proteins that become insoluble with ageing such as vitellogenins and ribosomal proteins can extend lifespan in *C. elegans*, it is unclear whether protein aggregation plays a causative role in ageing. We optimised an assay to measure accumulated insoluble proteins in *C. elegans*. Proteins that are detergent-soluble, -insoluble and the remaining pellets from young and old nematodes were extracted sequentially, pooled and loaded on a SDS-PAGE gel for separation. The gel was stained and imaged. Densitometry of the bands was quantified. Mass spectrometry was used to identify bands of insoluble proteins cut from the gel. As part of the validation of the assay, we identified an artefact – a prominent band at -40 kDa which increased with age in insoluble proteins as the outer membrane protein F/A precursors from *E. coli* that have many beta strands. We also investigated several genes related to the IGF pathway as modulators of insoluble protein aggregation, suggesting that genetic and pharmacological interventions targeting classical ageing pathways can possibly control the accumulation of protein aggregates.

Study on the role of Insulin/IGF signalling pathway in protein aggregation and its links to longevity in *Caenorhabditis elegans*

Yee Zhuangli¹, Manfred Roman Raida², Jan Gruber^{1,3}

¹Department of Biochemistry, Yong Loo Lin School of Medicine, National University of Singapore, Singapore
²Singapore Lipidomics Incubator (SLING), Life Sciences Institute, National University of Singapore, Singapore
³Division of Science, Yale-NUS College, Singapore

Introduction

Proteostasis declines during ageing leading to increased amount of misfolded and aggregated proteins in animals¹. Even though reducing the protein aggregates in *C. elegans* can increase lifespan², and *daf-2* mutants which are long-lived tend to have lower protein aggregation³, very little is known on how insulin/IGF signalling can modify protein aggregation and lifespan in animals. Using young and old *C. elegans*, I implemented and validated an assay to quantify total insoluble protein³. With this method, I determined the total insoluble protein in a short-lived *C. elegans* mutant of a gene involved in the insulin/IGF pathway and detected proteins that become highly insoluble with age using mass spectrometry (LC/MS).

Methods

Animal model: *Caenorhabditis elegans*

Strains/mutants: *R1177; gfp-1* for young versus old; mutation removes the germline when grown at 25°C; *N2*, wild type and *D1158*; *daf-16* (ortholog of FOXO transcription factor).

- Roundworm of small size
- Relatively short lifespan
- Ease of maintenance and manipulation
- Evidential protein aggregation in aged worms

1 Worm collection

Young worms (Day 4) or Old worms (Day 12)

2 Protein extraction

0.5% SDS, 0.5% SDO, 1% Triton-100, RIPA buffer, Washes, Extracted detergent-soluble proteins

2% SDS, 1 mM DTT, 6 M urea buffer, Washes, Extracted detergent-insoluble proteins

8M urea buffer, Insoluble worm pellet

Adapted from Dawid, D. C., et al. (2015). "Insulin/Igf1 protein aggregation as an inherent part of ageing in *C. elegans*."

3 SDS-PAGE

Sample preparation: Pooled 1st to 4th extracts each

Sample loading: Pooled insoluble, Pooled soluble, 2 µg total protein for each well, 15x (boost factor) volume used to load in each sample, Pellet, 10 µl

The first four extractions from each soluble and insoluble fractions were pooled before sample loading.

As the total insoluble proteins are relatively lower than the soluble proteins, a boost factor of 15 times to the volume required for pooled soluble was used for sample loading.

4 Silver staining of SDS-PAGE gel

5 Imaging, Image analysis for pixel intensity, LC/MS

Results

Extraction methods development and validation showed that the insoluble proteins are higher in aged *C. elegans*

Proteins from each extraction step: Pooled insoluble proteins (young versus old)

Left: Soluble proteins were washed off with each cycle of extraction. More proteins were released with the addition of urea buffer.

Right: Total insoluble protein increased in old *C. elegans*. Mean fold change quantified for the band intensities is 4.1 (mean ± 2.0) times higher in worms of day 12 compared to day 4.

Mutation in a gene (*daf-16*) involved in the insulin/IGF pathway increased total insoluble protein

Lifespan curves (N2 versus *daf-16*)

The *daf-16* mutation shortens the lifespan of *C. elegans*. The median lifespan of *N2* worms was 19 days, whereas the median lifespan for *daf-16* population was 16 days (Log-rank test, p-value: <0.00001).

Identification of highly insoluble proteins in aged worms

Insoluble worm pellets were loaded on a SDS-PAGE gel and stained to visualize proteins. Using LC/MS, bands extracted from gel were identified as muscle proteins (UNC-52, DIM-1) and structural proteins (PC-2). Caked bands appeared in aged pellets were identified as Outer Membrane Protein precursors F/A from *E. coli*.

Not only animals with the *daf-16* mutation were shorter lived, but they had also increased total insoluble proteins (total fold change of 15 compared to young *N2* populations).

Conclusions

Protein aggregates become insoluble in the cytoplasm with ageing. With this assay, I showed that there is a robust increase of insoluble protein in aged *daf-16* mutants suggesting that there may be a link between ageing and protein aggregation, regulated by the insulin/IGF pathway. This observation is consistent with the finding showing that in *daf-2* mutants (long-lived) with a germline deficient background have lower protein aggregation in old age⁴.

References

1. Lehman, J. & Morimoto, R. The biology of protein stress in aging and disease. *Annu Rev Biochem* 84, 481-502 (2015).
2. Zhuangli, Y. et al. Protein aggregation and proteostasis in the aging of *Caenorhabditis elegans*. *PLoS One* 10, e0130303 (2015).
3. Zhuangli, Y. et al. Model of protein aggregation in aging. *PLoS One* 10, e0130303 (2015).
4. Zhuangli, Y. et al. Model of protein aggregation in aging. *PLoS One* 10, e0130303 (2015).

Events

CSR = MANGROVE Clean Up



Our inaugural NUSMed CSR Project called, “Mangrove Clean Up” that was held on 12th of August 2017 which involved over 50 volunteers from Departments of Biochemistry and Pharmacology, turned out to be a huge success! The Committee engaged Mr. Siva from International Coastal Cleanup Singapore to share with us on the importance of conservation and why each one of our action counts towards conserving the environment. Our volunteers picked up unwanted trash and record data on the types of trash collected at Lim Chu Kang Mangrove. The data was then submitted to the International Coastal Cleanup Singapore as part of their annual global coastal cleanup data collection in coordination with Ocean Conservancy.



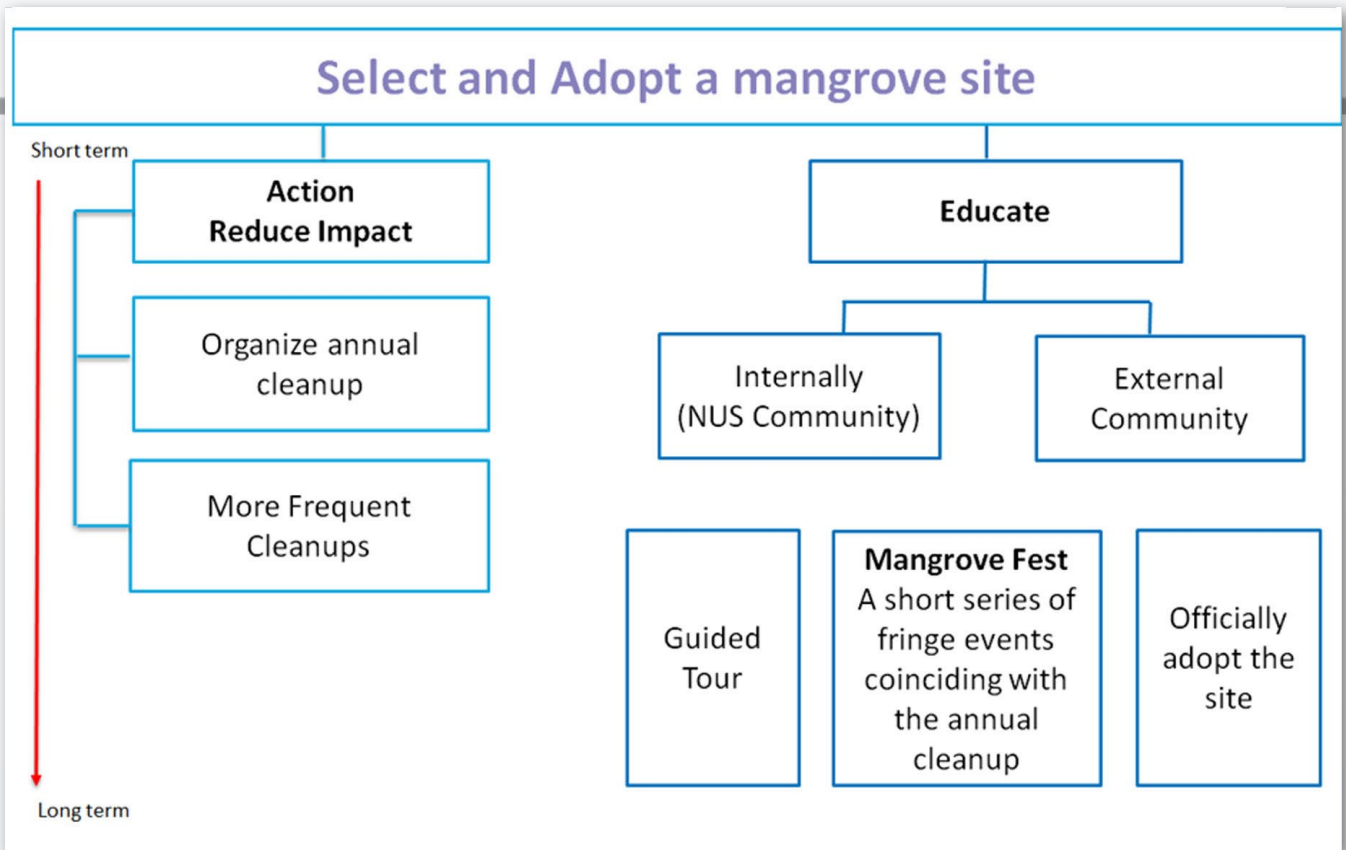
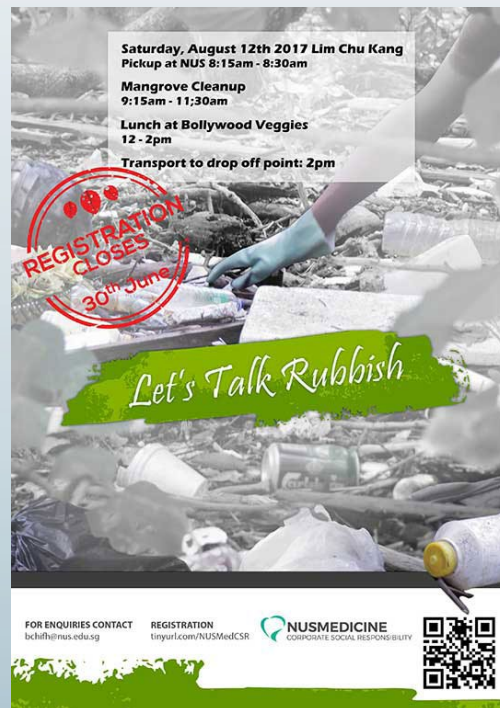
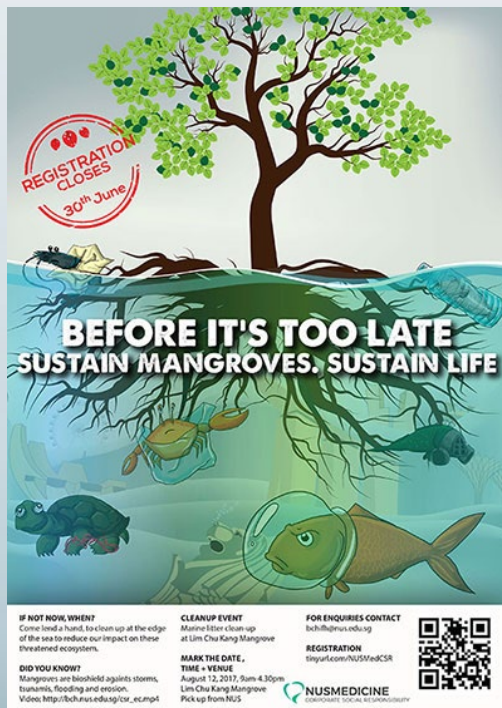
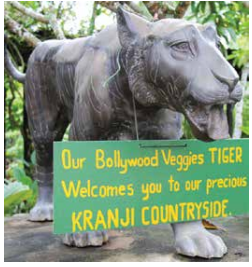


Figure 1 A five year plan we created for ourselves to achieve

As we actively moved around the area, what shocked us was that while the surface looked relatively clean, there were bags and bits of plastic buried under layers of sand, brought in by the tide which may have been hidden, possibly for a long time. Even the mangrove roots were speckled with bits of plastic, almost 'rooted' in the mud as if they were a part of the environment!





The project succeeded in bringing the community together for a good cause and making us realise how far our consumerism goes. Volunteers were amazed at collecting **164.2Kg of trash in under 90mins!** And this was considered a low-trash load day! Planning the event took a lot of teamwork, creativity and dedication to soldier on in the midst of our everyday work responsibilities. First and foremost, Thank You to Viknesh for facilitating the entire project; Aslam and Rahmah, who had done a great work on the promotional materials; Mafer for the beautiful mascot sketches; Dr Lai Lai for evaluating all the possible risks and safety needs (even crocodile sightings!) of the project; Safia for logistics coordination; the Operations Team from Department of Pharmacology; Pei Kun and Mafer for leading the volunteer teams and of course, all our volunteers for participating in our inaugural project! Not forgetting, Kean for leading this project together with me. It is the first time leading such a project, challenging ourselves (and sometimes each other!) and learning tremendously along the way. We can't wait for next year, for another great project!

Contributed by Ms Iman Fahim Hameed, co-Project Lead.

Events

SB 7.0

I WAS HERE

SB 7.0 - The Seventh International Meeting on Synthetic Biology

NUS Synthetic Biology for Clinical and Technological Innovation (SynCTI) was proud to co-host The Seventh International Meeting on Synthetic Biology SB 7.0 at the University Cultural Centre on 13 - 16 June this year. The Synthetic Biology (SB) Conference series is the world's foremost professional meeting in its field. Launched in 2004, the conference brings together a global community of synthetic biology practitioners to share, learn and debate on the latest efforts in the rapidly advancing field. Previous SB conferences were hosted at leading academic institutions such as the Massachusetts Institute of Technology, ETH Zurich, Stanford University and Imperial College London.





SB 7.0 saw over 1000 participants from 40 countries engaging with more than 100 speakers in 12 thematic sessions. Along with numerous associated satellite meetings, the conference allowed Singapore's synthetic biology community to forge new cross-border friendships, facilitate international collaborations and build synergistic global partnerships. The gathering culminated in a lovely evening at Gardens by the Bay where guests were wowed with local culinary delights and cultural performances.

Contributed by Committee of SB 7.0

Department of Biochemistry marks its 90th anniversary

The Department of Biochemistry turned 90 on August 4, 2017, having been established at the King Edward VII College of Medicine in 1927. From its humble beginnings as a mainly classical biochemistry department with a primary teaching mission, it has crossed sequential milestones to grow into a leader of biomedical sciences research and education.

Celebrations began with a morning symposium attended by NUS President Professor Tan Chorh Chuan and Dean of Yong Loo Lin School of Medicine, Associate Professor Yeoh Khay Guan. National Research Foundation returning scientist and current visiting professor, Professor Chua Nam Hai, was the keynote speaker, along with Dr Hazel Khoo from SERC and Dr Zhou Lihan, Co-founder and CTO of MiRXES. All three are Biochemistry alumni, representing three different eras, each having excelled in their respective domains. All three talks were inspiring, on the importance of long non-coding RNA in plant physiology with great importance in agriculture and food security, on the future and direction of the landscape of biomedical research in Singapore, and the trials and successes of how basic science research translates into commercial success in the story of MiRXES Pte Ltd. This is a company founded in 2014 by Associate Professor Too Heng-Phon and three PhD students from the Department, and supported by NUS and Exploit Technologies.

The day also featured an afternoon carnival featuring various competitions and game, as well as a career workshop for graduate students and research personnel facilitated by CEO of Science Center Prof Lim Tit Meng, Dr Zhou Lihan, Ms Grannas Sanna Pauliina and Dr Yeo Wee Loon from the Centre for Future-ready graduates. The August 4 celebrations were capped by a dinner held at NUS Guild House for 200 staff, students and former members of the department

Morning Symposium



Carnival



Gala Dinner



Contributed by A/P Gan Yunn Hwen, Chairperson of 90th Anniversary Organising Committee.

[Link Source](#)



[Check out the video!!](#)



Events

Terrarium Workshop



Prior to the workshop, the Staff Welfare Team had fun sourcing for the plants and cute figurines to be used at the workshop. It was one time that we could surf Qoo10 for work! Unfortunately, no sellers had dinosaur figurines for sale. Otherwise, we could have made our own jar-assic parks!

40 of Biochemistry staff signed up for the workshop. We were all excited and eager for the trainer to complete his briefing so we could start to design our very own eye-catching terrariums. I noticed how enthusiastic were Prof. Chua and Norindah digging into the soil and separating the little *Fittonia* plantlets. They were clearly experienced and not at all afraid to get their hands into the dirt. While the plants and decorations were provided, some staff even brought their own figurines! I saw a Pikachu and some Lego people in the terrariums; they were very adorable! All of us left with big smiles and a beautiful terrarium that we could bring back home to nurture and care for, for a really long time. 😊



The Team would like to express our gratitude to the OFM Horticulture Team and all the participants who made this workshop possible! The outcome of it was fun and enjoyable.



So, do remember to tag us at #bchstaffwelfare in future events when posting related welfare event photos up on Facebook/Instagram!

Contributed by Mr Arthur Sim, Chairperson of Staff Welfare Committee AY2017/18.

Events

Safety Tea



SAFETY TEA

date: on 4th October 2017

Wednesday

time: 3 pm

venue: LT35, MD6, Level 1, NUS

[3.00 pm]

Welcome Speech
Professor Markus Wenk
Head Department of Biochemistry

[3.10 pm]

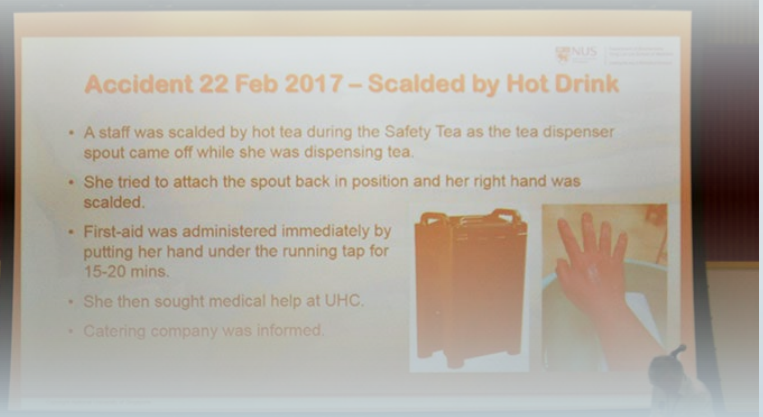
Townhall Meeting & Tea

attendance is compulsory and will be taken



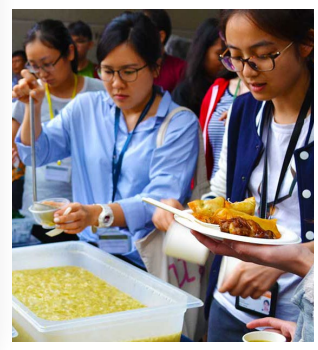
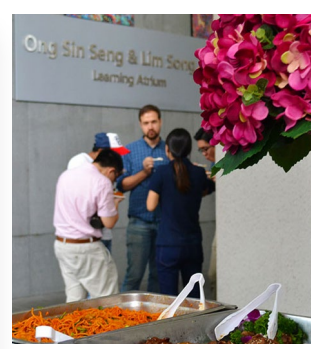
Department of Biochemistry
Yong Loo Lin School of Medicine

The last Safety Tea in 2017 was held on 4th October 2017 at 3pm in LT 35, MD6. It was attended by more than 130 staff and students from the department. Deputy Head, Associate Professor Maxey Chung, gave the opening address. Safety Chairperson, Dr Kenneth Ban, informed all of the new IVLE Safety Trainings, namely: OSHBIO07 (Biosafety for BSL-1 Labs), OSHBIO08 (Biosafety for BSL-2 Labs), OSHRAD03 (Safe Handling of Radioactive Materials) and OSHRAD04 (Safe Handling of X-ray Machines).



In addition, he also introduced Workplace Ergonomics and urged all to pay attention to Workstation Ergonomics as well as Laboratory Ergonomics. Last but not least, recent accidents and incidents that occurred in the department were shared so that everyone could learn from these accidents/incidents.

Contributed by Dr Yap Lai Lai, Member of Department's Safety Committee.



Retirement Lunch Reception For Aunty Lily 29 November 2017

Department sincerely thanked
For Your 34 Years of Outstanding
Dedication and Service
1983-2017



Research Publications

Pham, H. L., Ho, C. L., Wong, A., Lee, Y. S., & **Chang, M. W.** (2017). Applying the design-build-test paradigm in microbiome engineering. *Current Opinion in Biotechnology*, 48, 85-93. doi:[10.1016/j.copbio.2017.03.021](https://doi.org/10.1016/j.copbio.2017.03.021)

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Costello, C. M., Phillipsen, M. B., Hartmanis, L. M., Kwasnica, M. A., Chen, V., Hackam, D., **Chang, M. W.**, . . . March, J. C. (2017). Microscale Bioreactors for in situ characterization of GI epithelial cell physiology. *Scientific Reports*, 7(1). doi:[10.1038/s41598-017-12984-2](https://doi.org/10.1038/s41598-017-12984-2)

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Lee, Z. W., Teo, X. Y., Song, Z. J., Nin, D. S., Novera, W., Choo, B. A., . . . **Deng, L. W.** (2017). Intracellular hyper-acidification potentiated by hydrogen sulfide mediates invasive and therapy resistant cancer cell death. *Frontiers in Pharmacology*, 8(OCT). doi:[10.3389/fphar.2017.00763](https://doi.org/10.3389/fphar.2017.00763)

Gamage, A. M., Lee, K. -O., & **Gan, Y. -H.** (2017). Anti-Cancer Drug HMBA Acts as an Adjuvant during Intracellular Bacterial Infections by Inducing Type I IFN through STING. *JOURNAL OF IMMUNOLOGY*, 199(7), 2491-2502. doi:[10.4049/jimmunol.1602162](https://doi.org/10.4049/jimmunol.1602162)

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Farewell

We wish you boundless success wherever you go!

Aow Shao Bing, Johanan
Last day: 30 November 2017

Cho Han-Saem
Last day: 31 August 2017

Goh Kah Yee
Last day: 30 June 2017

Kumar Jaspal Kaur
Last day: 31 July 2017

Loh Jun Yan
Last day: 13 August 2017

Ng Mei Ying
Last day: 8 August 2017

Otto Fong Yong Chin
Last day: 30 July 2017

Lily, Ang Bee Keng
Last Day: 30 November 2017

Tan Hwee Tong
Last day: 31 July 2017

Tay Song Buck, Terence
Last day: 31 August 2017

Wang Zilong
Last day: 14 October 2017

Wong Wai Yen
Last Day: 30 June 2017

Wu Shuke
Last day: 30 June 2017

Zhou Yi
Last day: 30 June 2017

Lee Jia Xing
Last Day: 31 May 2017

Kin Xiao Xuan
Last Day: 7 December 2017

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 [Biochem_NUS](https://twitter.com/Biochem_NUS)

 [goo.gl/EOGX3a](https://www.youtube.com/watch?v=EOGX3a)

 [Bch_sec](https://www.instagram.com/Bch_sec)

If we missed any news that you would like to share,
please contact:

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ISSUE #28
December
2017

33

