ACADEMIC ACTIVITIES

Publication(s) of the week

1. Baek, H. J., Kim, S. E., Choi, E. K., Kim, J. K., Shin, D. H., Park, E. J., Kim, T. H., Kim, J. Y., Kim, K. G., Deng, C. X., and Kim, S. S. (2018) Inhibition of Estrogen Signaling Reduces the Incidence of BRCA1-associated Mammary Tumor Formation. *Int J Biol Sci* **14**, 1755-1768
2. Liu, Y., Gao, D., Xu, M., and Yuan, Z. (2018) Multispectral photoacoustic imaging of cancer with broadband CuS nanoparticles covering both NIR-I and NIR-II biological windows. *J Biophotonics*, e201800237
3. Wang, H., Gaur, U., Xiao, J., Xu, B., Xu, J., and Zheng, W. (2018) Targeting phosphodiesterase 4 as a potential therapeutic strategy for enhancing neuroplasticity following ischemic stroke. *Int J Biol Sci* **14**, 1745-1754

BCAT Recap

Discovery and development of a novel anti-ADAM17 antibody A9(B8) for the treatment of different types of cancer - Prof. Henry KWOK

On 14 November, Prof. Hang Fai Henry KWOK presented his recent research on the discovery and development of a novel anti-ADAM17 antibody A9(B8) for the treatment of different types of cancer. In the first part, Prof. KWOK introduced a strategy for the treatment of pancreatic ductal adenocarcinoma (PDAC) with A9(B8). Prof. KWOK and his research group evaluated the anti-tumor effects of A9(B8) on the pancreatic malignant transformation. They found that A9(B8) efficiently suppressed the motility of human pancreatic cancer cells and significantly delayed tumorigenesis in a mouse model. Taken together, all these preclinical data provide a starting point for clinical applications of ADAM17 targeted therapy. In the second part, Prof. KWOK introduced a novel combination therapy idea on using small-molecule EGFR tyrosine kinase inhibitors (EGFR-TKi) along with A9(B8) for the treatment of EGFR drug resistance non-small cell lung cancer (NSCLC). For this NSCLC project, the current data demonstrated that the inhibition of ADAM17 using A9(B8) could potentiate the anti-cancer effects of EGFR-TKi in NSCLC, which may offer an alternative option for cancer therapy.

Seminar Series

Caught in action: molecular mechanisms of the deadly type VI protein secretion system - Prof. Tao DONG

Prof. Tao DONG, Assistant Professor of University of Calgary, presented a talk on “Caught in action: molecular mechanisms of the deadly type VI protein secretion system” in FHS on 13 November.

In the complex microbial communities, microbes often rely on their antimicrobial systems as a survival tool to compete against other neighbouring species. Such antagonistic interaction can determine the dynamic changes or homeostasis of a community. The type VI protein secretion system (T6SS) is known to deliver antimicrobial effectors to target cells and is a common weapon of gram-negative bacteria. Prof. DONG has been using biochemical and imaging tools to investigate the mechanism of T6SS assembly and function, and its impact on community structure.

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ACADEMIC ACTIVITIES

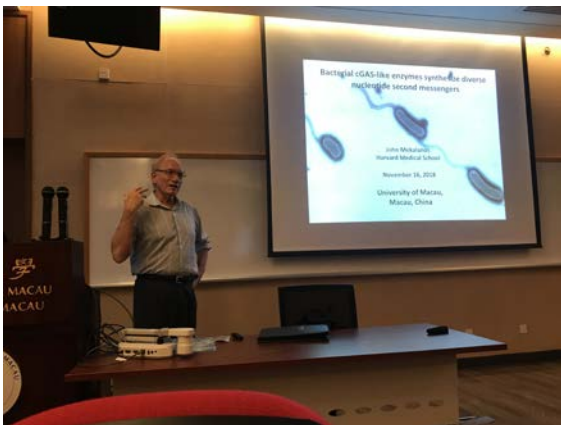
Seminar Series

Bacterial cGAS-like enzymes synthesize diverse nucleotide second messengers - Prof. John J. MEKALANOS

Prof. John J. MEKALANOS, Chair Professor of Harvard University, presented his research on “Bacterial cGAS-like enzymes synthesize diverse nucleotide second messengers” on 16 November.

Prof. MEKALANOS had used a bacterial reporter system in *Vibrio cholerae* to understand the activity of human cGAS, the major immune sensor of cytosolic DNA in eukaryotic cells, which synthesizes cyclic-di-GMP-AMP, a CDN that activates STING and the Type I interferon response. Cyclic dinucleotides (CDNs) play central roles in bacterial homeostasis and virulence as nucleotide second messengers. This enzyme is a major drug target in autoimmune disease and cancer. Bacterial CDNs also elicit immune responses during infection through pattern recognition receptors such as STING.

Prof. MEKALANOS had performed a systematic biochemical screen for bacterial nucleotide second messengers to find out if more CDNs exist in nature. Then he discovered a broad family of cGAS / *Vibrio cholerae* DncV-like nucleotidyltranferases (CD-NTases) that use both purine and pyrimidine nucleotides to synthesize an exceptionally diverse range of CDNs. A series of crystal structures establish CD-NTases as a structurally conserved family and reveal key contacts in the active-site lid that direct purine or pyrimidine selection. CD-NTase products are not restricted to CDNs and also include an unexpected class of cyclic trinucleotide compounds.



In Prof. MEKALANOS’s research, biochemical and cellular analysis of novel nucleotide second messengers demonstrate that these signals activate distinct host receptors and thus may modulate the interaction of both pathogenic and commensal microbiota with their animal and plant hosts.

STUDENT ACTIVITIES

FHS Postdoc Student Seminar - Presented by Prof. Wei GE’s group and Prof. William CHAO’s group

This week, the FHS Postdoc Student Seminar series continues. On 15 November, Mr. Yibo ZHANG of Prof. Wei GE’s group presented “Role of Y-box Binding Protein 1 in Regulating Zebrafish Ovarian Follicle Activation” and Dr. Helen Iok Lou IEONG of Prof. William CHAO’s group presented “Structural characterization of CKM and RhsP”.

The next seminar will be held on 29 November, presented by the groups of Prof. Wei GE and Prof. Garry WONG.

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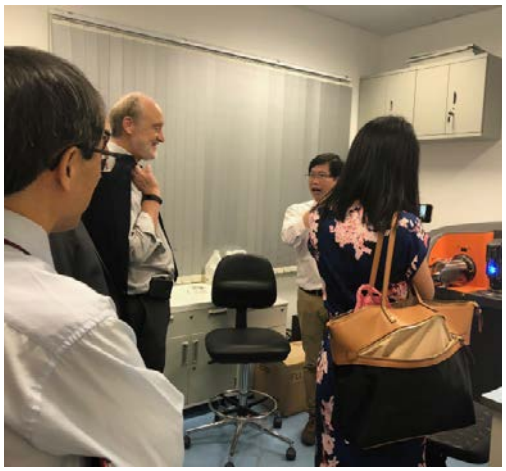
FHS News

US Georgetown University delegation visited FHS

Further studies are important in the world of research. Studying and working abroad is preferable by many researchers. Visitors in the field of biomedical, oncology, pharmacology and physiology from Georgetown University were invited to share how to prepare for an application to graduate schools in the US on 12 November.

Valuable steps for the preliminary preparation and notes for writing resume were shared to the participants for job hunting. New bachelor programme “Bachelor of Science in Bioinformatics” by FHS was promoted to the guests too.



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UPCOMING

NOVEMBER/DECEMBER

Mon	Tues	Wed	Thurs	Fri
19	20 **Seminar Series** The Roles of Gut Microbiota, Innate Myeloid Cells and Host Genetic in Determining the Age-related HBV Clearance in Mice Prof. Hurng-Yi WONG Time: 10:30-11:30 Venue: E12-G004	21	22	23
26	27 **Seminar Series** New Gold-based Anti-Cancer Drugs and Biodegradable Porous Polymers Prof. Murray BAKER Time: 14:00-15:00 Venue: E12-G004	28	29 **FHS Postdoc/ Student Seminar Series** Host: Wei GE and Garry WONG Time: 17:00-18:00 Venue: E12-G003	30 **The University of Edinburgh and University of Macau Forum on Biomedical and Brain Science Research** Time: 10:00 – 12:15 Venue: N21-G013 **Oral Defense** Shichao WANG Supervisor : Prof. Xuanjun ZHANG Time: 15:00 Venue: N6-G010
3	4	5 **Oral Defense** Xiaoyan WANG Supervisor : Prof. Ren-he XU Time: 15:00 Venue: N6-2022	6 **Seminar Series** Skin Regeneration: stem cells and their niches Speaker: Yaojiong WU Host: Renhe XU Time: 09:30-10:30 Venue: E12-G004	7

For more information or submission of articles to be featured, please contact Ms. Mathilde CHEANG at mathildec@umac.mo or 8822 4909