

ACADEMIC ACTIVITIES

Publication(s) of the week

1. He, Z., Huang, X., Wang, C., Li, X., Liu, Y., Zhou, Z., Wang, S., Zhang, F., Wang, Z., Jacobson, O., Zhu, J. J., Yu, G., Dai, Y., and Chen, X. (2019) A Catalase-Like Metal-Organic Framework Nanohybrid for O₂-Evolving Synergistic Chemoradiotherapy. *Angew Chem Int Ed Engl* [IF=11.954]
2. Sun, X., Liu, X., Xia, M., Shao, Y., and Zhang, X. D. (2019) Multicellular Gene Network Analysis Identifies a Macrophage-Related Gene Signature Predictive of Therapeutic Response and Prognosis of Gliomas. *J Transl Med* 17, 159 [IF=4.402]
3. Bian, C., Huang, Y., Li, J., You, X., Yi, Y., Ge, W., and Shi, Q. (2019) Divergence, Evolution and Adaptation in Ray-Finned Fish Genomes. *Sci China Life Sci* [IF=2.328]
4. Zhong, Y., Xia, L., Zhao, T. T., Zhang, Y. L., Zhang, Y. L., Li, W. Z., Hu, Y. Q., Yao, X. H., Ungvari, G. S., Balbuena, L., Liu, H. Z., and Xiang, Y. T. (2019) The Prevalence of Suicide Attempts and Independent Demographic and Clinical Correlates among Chronic Schizophrenia Patients in Agricultural Areas of China. *Psychiatr Q* [IF=1.382]

Government Interview on Talent Recruitment in Macao - Prof. William CHAO

Recently, Prof. William CHAO shared his views on the long-term development of talent recruitment in Macao. The interview is a part of "The 10 years of governance" programme produced by Office of The Chief Executive of the Macao SAR Government.

It is now available on YouTube at this link:

<https://www.youtube.com/watch?v=sR6N08vpwV0&t=2s>



但我一直關心國家和澳門的發展

希望為國家和澳門的社會文化

B-CAT Meeting - Prof. Joong Sup SHIM

At the B-CAT meeting on 22 May, Prof. Joong Sup SHIM introduced his team's latest research work on the discovery of synthetic lethality targets in RB1-mutant lung cancer. RB1 (retinoblastoma susceptibility protein 1) is a tumor suppressor that controls cell cycle and mitosis. Although RB1 was found to be frequently mutated in lung cancer, pharmacological targeting of RB1 mutation is difficult due to its nature of loss-of-function mutation. In this study, his team exploited synthetic lethality approach to identify pharmacologic targets in RB1-deficient lung cancer. From the works, they found that aurora kinase A (AURKA) inhibition is synthetic lethal with RB1 deficiency via disrupting microtubule dynamics. Their study provides AURKA and microtubule dynamics as novel precision cancer targets for the treatment of lung cancer with RB1 loss-of-function mutations.

Seminar Series

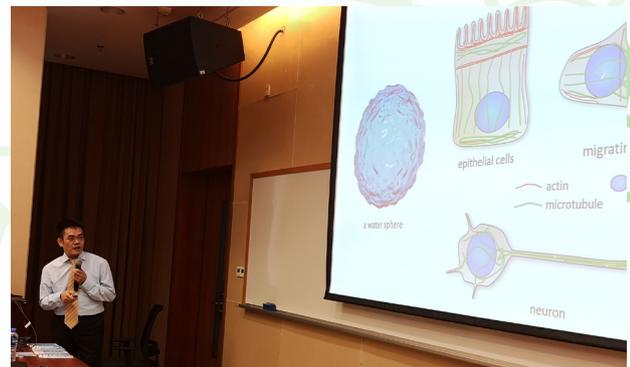
Cell Polarity and its Interplay with Aging - Dr. Wakam CHANG

Dr. Wakam CHANG, Research Associate Scientist, Pathology and Cell Biology of Columbia University Medical Center, presented a talk on “Cell Polarity and its Interplay with Aging” on 21 May.

Dr. CHANG claimed that establishing and maintaining polarity is critical for many cellular processes and for development and physiological functions of multicellular tissues. He said that some of the polarity-dependent functions are altered during aging, but only little is known about the underlying mechanisms. Therefore, he started his research on elucidating the molecular mechanisms through which the cell polarity interacts with aging.

Dr. CHANG presented how he found the cell polarization in migratory fibroblasts to be impaired by both pathological and normal aging due to the upregulation of nuclear envelope proteins SUN1. The elevated SUN1 led to excessive association of the nucleus to microtubules, and thus prevented the actin-dependent cell polarization. The cell polarity defect was further aggravated by a protein factor secreted by cells from the aged people.

Dr. CHANG finally concluded that he has identified several candidate proteins for the factors, and he will continue study the regulation between the factors' level and aging on the aging-related phenotypes using cellular and animal models



Seminar Series

Industrialized Protein / Peptide Identification and Characterization with Advanced Scientific Workflow - Ms. Lily LIU and Mr. Kevin ZHAO

Professional Health Trading Company Ltd. invited Ms. Lily LIU, Field Applications and Market Development Specialist, Taiwan and Mr. Kevin ZHAO, Senior Technical Consultant, USA, of Beckman Coulter presented a talk on “Industrialized Protein / Peptide Identification and Characterization with Advanced Scientific Workflow” on 23 May.

Ms. Lily LIU shared her views on the professional technique of the mass spectrometry-based proteomics research and Mr. Kevin ZHAO shared some skillful research methods for performing US HPLC, GC, SPE for biochemistry, protein and cancer research.

PHD ORAL DEFENSE

PhD Oral Defenses by Mingming QIN of Prof. Wei GE's group and Chengcheng SONG of Prof. Guokai CHEN's group

Ms. Mingming QIN supervised by Prof. Wei GE and Ms. Chengcheng SONG supervised by Prof. Guokai CHEN completed their PhD Oral Defenses on 20 and 22 May with thesis titles of "Genetic Analysis of Transcription Factors Involved in Zebrafish Sex Differentiation" and "The Interaction Between Metabolism and Signal Transduction in Cell Fate Determination of Human Embryonic Stem Cells", respectively.

Ms. Mingming QIN presented her research using the gene editing technology to dissect the molecular regulatory network of sex differentiation in zebrafish. She also presented how she used the clustered regularly interspaced short palindromic repeats/ CRISPR-associated protein 9 (CRISPR/Cas9) system to delete *Figla*, *Nobox*, *Nr5a1a* and *Nr5a1b* in zebrafish and generate potential double mutant lines with *tp53* or *amh* to investigate their collaborative roles with other genes. She also introduced the performance for the screening and establishment of several single mutant lines of *figla*(-10 bp), *nobox*(-13 bp), *nr5a1a* (-5 bp) and *nr5a1b* (-5 bp and +2 bp), and the investigation on their phenotypes via histological examination from the larval to juvenile and adult developmental stages. Ms. QIN finally concluded that gonad development was traced by EGFP labeling, further confirming the blockage of perinucleolar follicle formation by generating transgenic *figla* mutant fish. She also verified that *Nr5a1b* is a factor earlier than *Amh* in the sex differentiation process.



Ms. Chengcheng SONG presented how she used hESCs to address the unclear cellular metabolism in cell fate determination and the metabolism interaction of signal transduction during differentiation. She reported the effect of metabolism and related cell signaling on mesoderm differentiation under bone morphogenetic protein 4 (BMP4) induction in hESCs, and the examination for extracellular-signal-regulated kinase 5 (ERK5) signaling regulation of cell fate determination in hESCs. Ms. SONG finally concluded that pyruvate promoted 5' adenosine monophosphate-activated protein kinase (AMPK) activity and inhibited the mechanistic target of rapamycin (mTOR) pathway. She also demonstrated that ERK5 inhibition suppressed the transforming growth factor beta (TGF β) pathway and downregulated the WNT pathway. Furthermore, she found that ERK5 pathway inhibition also promoted cardiac differentiation.



6th Macau Symposium on Biomedical Sciences 2019



FHS is going to have the 6th Macau Symposium on Biomedical Sciences 2019 on 12 and 13 June, 2019. The theme of this year's symposium is INNOVATION. Let's join together!

For details, please refer to the related information posted on the website: <https://msbs2019.fhs.umac.mo/>.

Sponsors for the 6th Macau Symposium on Biomedical Sciences 2019

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MAY / JUNE				
Mon	Tues	Wed	Thurs	Fri
27	28	29	30	31
<p><u>Seminar Series</u> Advances in Plasma DNA Analysis for Noninvasive Prenatal Testing and Cancer Liquid Biopsy Time: 10:30-11:30 Venue: E12-G004</p>		<p><u>Seminar Series</u> A Re-evaluation of Macrolides as Quorum Sensing Inhibitors for Biofilm Control Host: Prof. Jun ZHENG Time: 10:00-11:00 Venue: E12-G004</p>	<p><u>FHS Postdoc/ Student Seminar</u> Host: Prof. Ren-He XU and Prof. Joong Sup SHIM Time: 17:00-18:00 Venue: N22-G002</p>	
3	4	5	6	7
		<p><u>B-CAT Meeting #10</u> Speaker: Dr. Kai MIAO Time: 17:00 Venue: E12-G004</p>		<p>Tuen Ng Festival</p>
10	11	12	13	14
		<p><u>6th Macau Symposium on Biomedical Sciences</u> Time: 09:00-18:40 Time: 09:00-18:10 Venue: HD Venue: HD</p>		