ACADEMIC ACTIVITIES

Publication(s) of the week

1. Zhang, B., Wang, F., Zhou, H., Gao, D., Yuan, Z., Wu, C., and Zhang, X. (2019) Polymer Dots Compartmentalized in Liposomes as a Photocatalyst for *In Situ* Hydrogen Therapy. *Angew Chem Int Ed Engl* **[IF=11.954]**

2. Kim, S. H., Iyer, K. R., Pardeshi, L., Munoz, J. F., Robbins, N., Cuomo, C. A., Wong, K. H., and Cowen, L. E. (2019) Genetic Analysis of Candida auris Implicates Hsp90 in Morphogenesis and Azole Tolerance and Cdr1 in Azole Resistance. *mBio* **10 [IF=7.14]**

3. Bhaskaran, S. P., Chandratre, K., Gupta, H., Zhang, L., Wang, X., Cui, J., Kim, Y. C., Sinha, S., Jiang, L., Lu, B., Wu, X., Qin, Z., Huang, T., and Wang, S. M. (2019) Germline Variation in BRCA1/2 is Highly Rthnic-specific: Evidence from over 30,000 Chinese Hereditary Breast and Ovarian Cancer Patients. *Int J Cancer* **[IF=5.933]**

4. Fang, M., Wang, Y. Y., Feng, Y., Ungvari, G. S., Ng, C. H., Wang, G., Xiang, Y. T., and Angst, J. (2019) Exploration of the Psychometric Properties of the 33-item Hypomania Checklist - External Assessment (HCL-33-EA). *J Affect Disord* **245**, 987-990 **[IF=4.035]**

5. Cheng, Z., Yuan, Y., Han, X., Yang, L., Zeng, X., Yang, F., Lu, Z., Wang, C., Deng, H., Zhao, J., Xiang, Y. T., Correll, C. U., and Yu, X. (2019) Rates and Predictors of One-year Antipsychotic Treatment Discontinuation in First-episode Schizophrenia: Results from an Open-label, Randomized, "Real World" Clinical Trial. *Psychiatry Res* **273**, 631-640 **[IF=2.572]**

6. Chen, X., Guan, W. J., Sun, S. X., Zheng, P. Y., Sun, L. H., Chen, D. H., Wang, D. D., Chen, C., Sun, B. Q., and Zhang, X. H. Douglas (2019) Effects of Intranasal Cellulose Powder on Asthma Control in Children With Mild-to-Moderate Perennial Allergic Rhinitis: A Randomized, Placebo-Controlled Trial. *Am J Rhinol Allergy* **[IF=1.968]**

7. Dong, M., Zeng, L. N., Zhang, Q., Ungvari, G. S., Ng, C. H., Chiu, H. F. K., Si, T. M., Sim, K., Avasthi, A., Grover, S., Chong, M. Y., Chee, K. Y., Kanba, S., Lee, M. S., Yang, S. Y., Udomratn, P., Kallivayalil, R. A., Tanra, A. J., Maramis, M. M., Shen, W. W., Sartorius, N., Mahendran, R., Tan, C. H., Shinfuku, N., and Xiang, Y. T. (2019) Concurrent Antipsychotic Use in Older Adults Treated with Antidepressants in Asia. *Psychogeriatrics* **[IF=1.451]**

B-CAT Meeting - Prof. Sanming WANG

At the B-CAT meeting on 13 February, Prof. Sanmming WANG reported the research progress in his laboratory after he has joined FHS for two years.

One study addressed the issue of incomplete penetrance, a common phenomenon in genetics. Although *BRCA1* mutation is one of the most penetrance genetic predispositions for cancer, a portion of the *BRCA1* mutation carriers does not develop cancer in their lifetime. In the study, they used whole exome sequencing to compare germline variation of all genes in pairs of breast cancer-unaffected and breast cancer-affected *BRCA1* mutation carriers, which were from the same family carrying the same *BRCA1* mutation. The study identified a group of 'beneficial' variants enriched in the breast cancer-unaffected carrier group distributed in multiple functional pathways. These variants were all high-frequent common variants in human population. The functional analysis confirmed that these variants can disturb the function of many pathways. The study concludes that evolution plays important roles in incomplete penetrance through enriching common variants in the mutation carrier population. By disturbing the function of multiple functional pathways, these common variants can antagonize the oncogenic effects of *BRCA1* mutation to protect the mutation carrier population from cancer. The study was published as the first Macau paper in the European *Journal of Cancer* since its inception in 1965.

Prof. WANG also reported the study of determining ethnic-specificity of *BRCA* mutation in different human ethnic populations. In the study, they performed a comprehensive study to mine all *BRCA* data reported from Chinese ethnicity. After standardization and reannotation, they developed the data into the first open access Chinese *BRCA* mutation database containing the largest *BRCA* data out of Caucasian population. Using the rich data, they performed comprehensive comparison with the *BRCA* data from non-Chinese population. The results show the presence of substantial differences of *BRCA* variation between Chinese and non-Chinese ethnicities. Their study confirms the ethnic-specific nature of *BRCA* mutation, and concludes that the current Caucasian population-based *BRCA* reference data is not adequate to cover the *BRCA* mutation in non-Caucasian populations. Their study supports to establish ethnic-based *BRCA* standards for the non-Caucasian populations. The study was published in the *International Journal of Cancer*.

Other studies Prof. WANG reported included a study in developing ethnic-based human core-promoter variation map and its value as a standard reference to identify cancer mutations in the regulatory core-promoter region. The study was submitted for publication. He also reported the progress of identifying evidence for the presence of RNA world in modern life.

Seminar Series

Near-infrared Fluorescent Probes for Multiplexed *In vivo* Bioimaging and Biosensing - Prof. Fan ZHANG

Prof. Fan ZHANG, Professor of Fudan University, presented a talk on “Near-infrared Fluorescent Probes for Multiplexed In vivo Bioimaging and Biosensing” on 12 February.

Deep tissue imaging in the second near-infrared (NIR-II) window holds great promise for physiological studies and biomedical applications. However, inhomogeneous signal attenuation, due to biological matter hampers the application of multiple-wavelengths NIR-II probes to multiplexed imaging. Therefore, Prof. ZHANG presented lanthanide-doped NIR-II nanoparticles with engineered luminescence lifetimes for *in vivo* quantitative imaging using time-domain multiplexing. To achieve this, Prof. ZHANG’s team devised a systematic approach based on controlled energy relay that they created a tunable lifetime range spanning 3 orders-of-magnitude upon a single emission band.

Prof. ZHANG’s team consistently resolved the selected lifetimes from the NIR-II nanoparticle probes at depths up to 8 mm in biological tissues, where signal-to-noise ratio derived from intensity measurements drops below 1.5. He demonstrated that robust lifetime coding was independent of tissue penetration depth, and he applied *in vivo* multiplexing to identify tumour subtypes in living mice. Finally, his results correlated well with the standard *ex vivo* immunohistochemistry assays, suggesting that luminescence lifetime imaging could be used as a minimally invasive approach for disease diagnosis.

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UPCOMING

FEBRUARY / MARCH

Mon	Tues	Wed	Thurs	Fri
18	19	20 **Seminar Series** Immunoregulatory mechanisms of mesenchymal stem and stromal cells in inflammatory disease Speaker: Prof. Yufang SHI Host: Prof. Renhe XU Time: 15:00-16:00 Venue: E12-G004 **Career Sharing** Host: Prof. Guokai CHEN Time: 14:30-16:00 Venue: E12-G003	21 **FHS Postdoc/ Student Seminar** Host: Prof. Wenhua ZHENG and Prof. Vivien WANG Time: 17:00-18:00 Venue: N22-G002	22
25	26	27 **B-CAT Meeting #3** Speaker: Prof. Douglas ZHANG Time: 17:00 Venue: E12-G004	28	1
4	5	6 **3rd Symposium on Biomedical Sciences for Students, PDs, and RAs** Time: 09:00 Venue: N21-G013SHI	7 **FHS Postdoc/ Student Seminar** Host: Prof. Tzu-Ming LIU and Prof. Ruiyu XIE Time: 17:00-18:00 Venue: N22-G002	8

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