

Department of Biomedical Sciences  
presents a seminar



# “The crossroad of metabolism and immunity in liver cancer”

**Dr. Carmen Chak Lui Wong**  
**The University of Hong Kong**

**Date : 13 October 2017**

**Time: 11:00am to 12:30pm**

**Venue: Meeting Room 1B-G04, G/F, Block 1, To Yuen Building**

## **Abstract**

Liver cancer, or hepatocellular carcinoma (HCC), is the fifth most common and second most fatal cancer worldwide. HCC cells undergo extensive metabolic reprogramming to produce metabolites favoring tumor growth. Due to their metabolically active nature and hypoxia, HCC cells experience high level of oxidative stress which could damage different cellular components. HCC cells have multiple adaptation systems to overcome oxidative stress. HCC cells could decelerate the electron transfer in the mitochondria through the HIF/NDUFA4L2 pathway to reduce reactive oxygen species (ROS) production. Meanwhile, HCC cells could turn on their antioxidant (NADPH)-producing pathways including pentose phosphate pathway and folate cycle through NRF2 to counteract ROS. Recently, we found that metabolic reprogramming not only affects metabolites intracellularly but extracellularly. We found that extracellular AMP creates an immune-suppressive microenvironment in HCC by maintaining the myeloid-derived suppressor cells (MDSCs) in the tumor niche. Targeting the underlying molecular pathways represents an attractive therapeutic strategy for HCC.

## **About the Speaker**

Dr. Carmen Wong obtained her BSc degree in Microbiology and Immunology from the University of British Columbia in Canada. After finishing her undergraduate study, her growing interests in science motivated her to explore biomedical research. She decided to return to her home country and pursue her MSc study in Biotechnology in Hong Kong University of Science and Technology. She further completed her PhD degree in the Department of Pathology, the University of Hong Kong, where she developed strong interests and passion in cancer research. Her PhD study has brought her the best PhD thesis awards and the Hong Kong Young Scientist Award. After her PhD study, she received the Croucher Foundation Fellowship and obtained her post-doctoral training from a renowned scientist, Professor Gregg Semenza, in the Johns Hopkins University, studying the roles and molecular mechanisms of hypoxia (oxygen deprivation) in breast cancer progression. Hypoxia is a common pathological feature in cardiovascular diseases, ischemia (e.g. stroke, limb, and retinal ischemia), and cancer. Hypoxia, through the stabilization of hypoxia-inducible factors (HIFs), stimulates a wide repertoire of events that promote cancer growth. Two hypoxia-mediated events that caught her attention include metabolic reprogramming and tumor microenvironment formation. After returning to Hong Kong, Dr. Wong became a principal investigator and her team is intensively studying these two research areas in a fatal cancer, hepatocellular carcinoma, which is particularly prevalent in hepatitis B virus endemic regions including Hong Kong. More excitingly, Dr. Wong's research team is beginning to unravel the tight relationship between metabolic reprogramming and tumor microenvironment formation, two seemingly unrelated disciplines, in cancer development.

She is currently an Assistant Professor at the Department of Pathology of HKU. Recently, she received the Croucher Innovation Award and the UBC Alumni Builder Award for her work in understanding the metabolism and molecular signatures of liver cancer. Her research was published in Nature Communications, PNAS, Gastroenterology, Hepatology, Clinical Cancer Research, and Journal of Clinical Investigation. She is currently a principal investigator of the State Key Laboratory for Liver Research of HKU.

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**All are welcome!**