Theme-based Research Scheme on Potentiating Host Immunity for HIV-1 Functional Cure

AIDS Institute, Dept of Microbiology

Seminar

Cellular plasticity, cellular heterogeneity and single cell sequencing

11:00am, Thursday, December 20, 2018

Seminar Room 4, G/F, Laboratory Block, 21 Sassoon Road

Speaker: Professor Xin LU

Director, Ludwig Institute of Cancer Research Oxford Branch, University of Oxford

Prof. Lu is an elected Member of the European Molecular Biology Organisation, Fellow of the Academy of Medical Sciences, Fellow of the Royal College of Pathologists and Fellow of the Royal Society of Biology. She is a world-expert in the tumour suppressor protein p53 and her studies were among the first to show that p53 senses DNA damaage, how p53 responds to oncogene activation and that DNA damage-induced p53 is transcriptionally active. One of her most significant contributions to cancer research has been the discovery of a new family of regulators of p53, the ASPP family of proteins (ASPP1, ASPP2 and iASPP). She has a major current research focus on upper gastrointestinal tract cancers, investigating molecular mechanisms underlying cancer initiation and progression.

Abstract: Tumour heterogeneity underlies differences in cancer progression and responses to therapy and is caused by genetic and cellular heterogeneity. Cellular heterogeneity is itself caused by cellular plasticity. More than 80% of human tumours originate from epithelial cells, which have the unique property of cell polarity. Cell polarity is a defence against infection and cancer cell invasion. Prof Lu will discuss how epithelial cell plasticity is controlled at several levels: from external signals influencing cell polarity and cell adhesion to gene regulation. She will also illustrate how single cell sequencing can enable us to study cellular heterogeneity in human tissues. Prof Lu's work on epithelial cancers particularly focuses on stomach cancer and oesophageal cancer. Her group is investigating the molecular basis of these cancers and their heterogeneous characteristics, which influence disease risk, diagnosis and responses to therapy. For example, one of the most significant risk factors for oesophageal adenocarcinoma is Barrett's oesophagus, a non-malignant chronic inflammatory condition, and identification of those Barrett's oesophagus patients who have a high-risk of progression to OAC would provide important opportunities for intervention and prevention. Prof Lu's group is taking a single cell genomics approach to investigate the pre-malignant lesions.

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