2017 Hong Kong Inter-University Postgraduate Symposium in Biochemical Sciences

Jun 16, 2017 (Fri)

Seminar Room 3, G/F, Jockey Club Building for Interdisciplinary Research
The University of Hong Kong, 5 Sassoon Road, Pokfulam, Hong Kong

Organizers

THE UNIVERSITY OF HONG KONG

The Chinese University of Hong Kong

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University Grants Committee

The Symposium has been supported by the Postgraduate Students Conference/Seminar Grant of the Research Grants Council, Hong Kong
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<td>9:30-9:45</td>
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<td>Plenary Talk 2 - Professor JONES Gareth (King’s College London, UK) Invadosomes: the signature of wandering cells</td>
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Guojun Sheng, Ph.D.
Professor, International Research Center for Medical Sciences,
Kumamoto University, Kumamoto, Japan

Dr. Guojun Sheng received his undergraduate education in biology from Fudan University (China) and his PhD in molecular and developmental genetics from the Rockefeller University (USA) under the supervision of Professor Claude Desplan. During his doctoral research, Dr. Sheng also trained in Embryology at the Marine Biological Laboratory (USA). His postdoctoral work was carried out in molecular embryology in the laboratory of Professor Claudio Stern at Columbia University (USA) and University College London (UK). Before joining Kumamoto University (Japan) as a full professor (2015-present), Dr. Sheng had directed the Laboratory for Early Embryogenesis at RIKEN Center for Developmental Biology (Japan), first as a Team Leader (2004-2014) and then as a Senior Investigator (2014-2015). He is also the Vice President of the EMT International Association (TEMTIA), an Associate Editor of the Journal of Genetics and Development (genesis), and an editorial board member of Developmental Dynamics (the official journal of the American Association of Anatomists). Dr. Sheng has published extensively on gastrulation, epithelial-mesenchymal transition, extraembryonic mesoderm differentiation and comparative embryology.

Epithelial-Mesenchymal Transition: From Embryology to Medicine
Epithelial-Mesenchymal Transition (EMT) is a process in which cell-cell organization changes from an epithelial type to a mesenchymal one. Widely observed in animal development, EMT occurs rarely in adult homeostasis and abnormal EMT in the adult is one of the major causes for many life-threatening diseases such as cancer and fibrosis. Our lab uses the avian model to study molecular mechanisms underlying developmental EMT. We are particularly interested in understanding how EMT shapes up a critical early developmental window called gastrulation, in which three principal germ layers, the ectoderm, mesoderm and endoderm, are generated from a pluripotent epithelial epiblast cell population. In this talk, I will present data from our molecular analysis on the regulation of epiblast-basement membrane interaction during gastrulation EMT. I will also discuss about how diverse EMT processes in development can be understood from a few simple cell biological criteria and how such understanding can help us evaluate pathological EMTs in disease and achieve more efficient germ layer differentiation in vitro.

Selected publications:
Professor Gareth E Jones graduated from University College London specialising in cell and developmental biology under the mentorship of one of the founding fathers of the study of cell behaviour in vitro, Michael Abercrombie. He obtained his Ph.D. at Glasgow University working in the first Department of Cell Biology to be set up in the UK led by Adam Curtis, a protégée of Abercrombie. Subsequently he took up posts back in London, travelled to the USA with prestigious Royal Society-Leverhulme Trust funding and eventually returned to take a full time position in the Anatomy Department of King’s College London in 1986. In 1993 he was one of three academics driving the establishment of the Randall Division at King’s through bringing together research-active staff from diverse departments into one building. Its ensuing success acted as a model for subsequent research amalgamations within the University. In 1996 Professor Jones was appointed an honorary group leader within the Medical Research Council Cell Motility Unit sited at King’s and in 2001 became the Head of the Cell Motility & Cytoskeleton Section. Over the subsequent years, key recruitments established the Section as one of the most distinguished centres of cell motility research within Europe, establishing the only Nikon Imaging Centre in the UK and ensuring close links with the Francis Crick Institute, London.

As well as being active in his own research area of the podosome biology of myeloid cells he was instrumental in the promotion of international research excellence and collaborations through activities such as joining the founding membership of the Invadosome Consortium.

Professor Jones has held numerous University and external appointments relevant to research policy: membership of the University Research Strategy Committee and Research Excellence Framework group; Medical Research Council (UK) panels and international advisory and SAB panels, plus appointments as scientific consultant to numerous international microscope-imaging instrumentation, biotechnology and commercial investment agencies. He currently holds honorary visiting professorships at NUS, Singapore and at HKU. He was appointed to The UGC (Hong Kong) Research Assessment Exercise Group for 2014 and now holds a similar panel membership for an Irish University group. He is currently Chair of the Newton Panel (Medical and Biological Sciences) at the British Council.
Invadosomes: the signature of wandering cells

Cells of the adult rarely move from their differentiated tissue of function, whether it be within liver, gut or skeleton. Two major exceptions to this rule are seen in cells of the adult immune system and with invasive metastatic cells of carcinomas. In healthy individuals, immune cells are constantly trafficking from the blood circulation into and out of both lymphatics and the many soft connective tissues of the body. This process generates the non-specific mechanism that leads to removal of pathogens before they can start an active infection, a process often termed innate immunity. Failure of this system leads to many disease states in humans ranging from many of the primary immunodeficiency syndromes to autoimmune disorders.

My laboratory has for a very long time been interested in the molecular mechanisms governing cell migration and in this lecture I shall review what we have learned so far about the roles of the dynamic actin cytoskeleton, cell adhesion to connective tissues and invasion through basement membrane barriers that allow phagocytic macrophages and immune surveillance dendritic cells to traffic in the adult. In addition, I shall describe how mechanisms commonly found in myeloid immune cells such as macrophages and dendritic cells have seemingly been hijacked by adult epithelial cells that become cancerous, especially those that re-discover the process of EMT familiar to you from Professor Sheng’s earlier lecture. Such cells once again utilise many of the features of immune cell migration to break into the stroma underlying the basement membrane which contains lymphatic and vascular routes to cancer cell dissemination, i.e. metastasis.

Selected publications:

Review:
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Mr Simon Chi Chin SHIU |
| The Chinese University of Hong Kong | Dr Jack Wing Tak WONG  
Mr Francis CHEN |
| The Hong Kong University of Science and Technology | Dr Yan YAN  
Miss Ann Yanru AN |

## Poster judges

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| The University of Hong Kong | Dr Wilson Yick Pang CHING  
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