

Seminar Announcement
- All Are Welcome -

Speaker : **Prof Mark Marsh**
*Director, MRC Laboratory for Molecular Cell Biology
and Cell Biology Unit, UCL*

Title : ***"The ins and outs of HIV"***

Date : **29 April 2013 (Monday)**

Time : **11:00am – 12:00pm**

Venue : **Breakthrough Theatrette, Matrix Level 4**

Host : **Dr Brian Burke**
(Tel: 64070421, e-mail: brian.burke@imb.a-star.edu.sg)



Abstract:

We aim to understand aspects of the cellular and molecular mechanisms that underlie the replication of mammalian viruses, specifically how viruses enter target cells, and how new virus particles are assembled and released from infected cells. We currently use HIV-1 and the related simian viruses as models where detailed understanding of cell biology may have application in the development of novel inhibitors or treatments.

Virus entry and productive infection generally require the expression of specific cell surface receptor molecules on target cells. In many cases, virus-receptor binding is followed by endocytosis and viral penetration from within intracellular organelles, usually endosomes. For some viruses, including HIV, the reactions that drive membrane fusion are initiated when the virus engages cell surface receptors – for HIV the co-receptors CD4 plus a chemokine receptor (CCR5 or CXCR4). These infection events can be abrogated by down regulating the cell surface expression of the receptor either by specifically inhibiting synthesis or inducing receptor internalisation and removal from the cell surface. For example, small molecules that inhibit the synthesis of specific cell surface receptors can, in culture systems at least, prevent HIV infection. Agonistic receptor-binding ligands can also be used to induce receptor internalisation and inhibit infection. We are trying to understand the cellular and molecular mechanisms underlying these processes, in particular the events regulating the cell surface expression and endocytosis of HIV-binding co-receptors CCR5 and CXCR4. As these molecules are G protein coupled receptors, our work may have relevance to understanding the trafficking events controlling the functions of other GPCRs. Moreover, our approaches can be applied to further understand other complex virus receptor systems.

About the Speaker:

Professor Marsh was awarded his Ph.D. in Zoology from University College London in 1979. He subsequently joined the laboratory of Dr. Ari Helenius, at the EMBL in Heidelberg, Germany and later in the Department of Cell Biology at Yale University, New Haven, Connecticut. His postdoctoral work focused on elucidating the mechanisms by which enveloped viruses gain access to host cells via their endocytic pathways. Professor Marsh gained his first independent position at the Institute of Cancer in London where he continued with research activities on viral infection. He later returned to University College London where he was appointed as Group Leader in the MRC Laboratory of Molecular Cell Biology (LMCB) as well as Professor in the Department of Biochemistry and Molecular Biology. Since 2006 he has been director of the LMCB.