Institute of Medical Biology
A*STAR

Seminar Announcement

- All Are Welcome -



Speaker: **Prof Susan Ross**
University of Pennsylvania

Title: **The role of APOBEC3 in restricting in vivo infection by murine retroviruses**

Date : **10 May 2012 (Thursday)**

Time : **11am – 12pm**

Venue: **Aspiration Theatrette, Matrix Level 2M, Biopolis**

Hosts : **Prof Davor Solter & Prof Barbara Knowles**
Tel: 64070170, email: davor.solter@imb.a-star.edu.sg
Tel: 64070172, email: barbara.knowles@imb.a-star.edu.sg

Abstract of the Seminar:

The use of genetic and molecular approaches to the study of virus-host interactions *in vivo* provides us with insight into the processes that determine the susceptibility and resistance of individuals to viral infection and virus-induced cancer (approximately 20% of human cancers). Our interests lie in determining why viruses infect specific hosts and how in turn, host genes confer resistance to this infection. The genetics of susceptibility is easily studied with naturally-occurring pathogens in inbred and genetically-manipulated mice. Two viruses we study are mouse mammary tumor virus (MMTV) and murine leukemia virus (MLV). Both are passed from mothers to offspring through milk and spread in lymphoid cells. These viruses thus serve as models for the human milk-borne retroviruses HIV-1 and HTLV1. We have identified a number of genes and mechanisms that confer resistance to infection by MMTV and MLV. One gene which we recently discovered is involved in the control of MMTV and MLV infection is *Apobec*3, an intrinsic immune factor that restricts many viruses, including HIV. APOBEC3 proteins are packaged into virions and inhibit retroviral replication in newly infected cells, in part by deaminating cytosine on the negative strand DNA intermediates. We found that mouse APOBEC3 protein is packaged into MMTV and MLV particles in vitro and dramatically reduces viral titers. Most importantly, APOBEC3 knockout mice are more susceptible to MMTV and MLV infection compared to their wild type littermates. These findings indicate that the APOBEC3 provides protection to mice against retroviral infection and represent the first demonstration that it functions during retroviral infection in vivo. We are currently studying how genetic variation in the mouse APOBEC3 genes affects their ability to inhibit infection and whether APOBEC3 can be used as an anti-retroviral therapeutic target.

About the Speaker:

Susan R. Ross, Ph.D. is Measey Professor of Microbiology and the Associate Dean and Director of Biomedical Graduate Studies at the University of Pennsylvania Perelman School of Medicine. Dr. Ross received her Ph.D. from Princeton University in 1979. She conducted postdoctoral research in molecular biology and virology at the University of California, San Francisco from 1979-82 and in mouse genetics and transgenic studies at the Wistar Institute in Philadelphia from 1982-83. Dr. Ross was on the faculty of the School of Medicine at the University of Illinois at Chicago in the departments of Biochemistry and Genetics from 1983 - 1994. In 1994, she moved to the University of Pennsylvania. Dr. Ross has served as Associate Dean for Biomedical Graduate Studies since 2002.

Dr. Ross's research interests are in the areas of the genetics of host-virus interactions, particularly retroviruses and new world arenaviruses, and mouse models of breast cancer. She is a Senior Editor for the Journal of Virology and an Associate Editor of PLoS Pathogens. Dr. Ross has received several awards for teaching and research, including the Leukemia Society Scholar Award, the B. Kenneth West University Scholar Award, the American Society for Microbiology Wellcome Visiting Professorship, the American Society for Microbiology International Professorship (Academia Nacional de Medicina, Buenos Aires) and the Center for Retrovirus Research Distinguished Research Career Award. Dr. Ross was elected a Fellow of the American Academy of Microbiology in 2002 and an AAAS Fellow in 2009.