

Seminar Announcement - All Are Welcome -

Speaker : **Dr Srikala Raghavan**

*Center for Inflammation and Tissue Homeostasis,
Institute for Stem Cell Biology and Regenerative Medicine (inStem),
NCBS, Bangalore, India*



Title : ***“Breaking Barriers: Role of Sterile Inflammation in Reorganizing the ECM”***

Date : **1 October 2014 (Wednesday)**

Time : **3.00pm – 4:00pm**

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

Host : **Prof Birgit Lane**

*Executive Director, Institute of Medical Biology
Co-Executive Director (Scientific), Skin Research Institute of Singapore*

Abstract:

Integrins are heterodimeric trans-membrane receptors that connect the cellular cytoskeleton to the extracellular matrix and play a vital role in cellular processes such as proliferation, differentiation, migration and adhesion. We previously reported the generation/characterization of the conditional knockout of integrin $\beta 1$ in murine skin epidermis. These mice displayed a marked failure in the organization of the epithelial basement membrane (BM) that resulted in the loss of adhesion between the epidermis and the underlying dermis, thereby leading to neonatal lethality. Further characterization of the $\beta 1$ KO skin unexpectedly revealed a strong inflammatory and wound response, which is associated with the recruitment of immune cells from both the innate and adaptive immune system. Of particular importance is the fact that this immune response is during embryonic development, i.e., in the presence of an intact barrier, and at a time when there are no extrinsic wounds or skin microbiome that may facilitate this process. Additionally if the sterile stimulus is not resolved, it can lead to chronic inflammation and tissue damage. We demonstrate that administration of anti-inflammatory drugs can largely rescue the ECM organization of the $\beta 1$ KO mice. Therefore, we propose that the epidermis-specific $\beta 1$ -integrin KO provides us with a unique model system to address the molecular basis of sterile inflammation, which remains poorly understood. Moreover our KO model could serve as a screening platform for drugs that may dampen this effect and thus work as future therapeutics for chronic inflammatory conditions of the skin.

About the Speaker:

Dr Srikala Raghavan received her B.Sc degree from Bangalore University. She joined the National Center for Biological Sciences (NCBS) in Bangalore for her Masters thesis, where she worked with Prof. K. Vijay Raghavan on the developing indirect flight muscles of *Drosophila melanogaster*. She joined the University of Cambridge for her Ph.D as a Cambridge-Nehru Scholar, and worked with Dr. Rob White investigating at the role of connectin (a homophilic cell adhesion molecule) in axon guidance in *Drosophila*. For her post-doctoral work, Srikala transitioned into working with the mammalian skin as a model system and joined the lab of Prof. Elaine Fuchs at the University of Chicago and later at The Rockefeller University. In Elaine's lab, Srikala generated the conditional KO of integrin beta 1 in the skin epidermis, and established its role in organizing the ECM and directed cell migration. In 2005, Srikala established her lab at Columbia University in the College of Dental Medicine and Dept of Dermatology. In 2012, she moved to the newly established Center for Inflammation and Tissue Homeostasis at inStem Bangalore as a Group Leader. The primary interest of the Raghavan lab is to elucidate how integrins and their associated proteins maintain epithelial homeostasis both in development and in disease.