

# Joint SigN – IMB Seminar



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### Pathogenesis and future drug targets in inflammatory skin diseases with live imaging of the skin in 3D

Inflammatory skin diseases, such as atopic dermatitis (AD) and contact dermatitis, are common skin diseases. However, their treatments remain unsatisfactory. For the development of therapeutic strategy, it is crucial to understand their pathogenesis.

The seminar will discuss the recent findings on the pathogenesis of inflammatory skin diseases. For example, AD is a common disease, characterized by a complex, heterogeneous pathogenesis, including skin barrier dysfunctions, allergy/immunology, and pruritus. When the skin barrier is disrupted, the skin is predisposed to being penetrated by external stimuli. Foreign antigens can be subdivided into two subsets by size: haptens (including metals) and protein antigens. It is known that a single hapten challenge provokes Th1 initially, but that repeated elicitation with haptens results in a shift toward Th2-dominated responses. On the other hand, exposure to protein antigens directly induces Th2-dominant conditions via the thymic stromal lymphopoietin (TSLP) receptor on Langerhans cells. Recently, it has been revealed that Th2 cells produce IL-31, which provokes pruritus, and that Th2 cytokines decrease filaggrin expressions by keratinocytes. These findings suggest that Th2 conditions lead to pruritus and barrier dysfunctions. Therefore, the highly complex interplay among skin barrier abnormality, allergy/immunology, and pruritus exists as a trinity in the development of AD.

Understanding the pathogenesis of inflammatory skin diseases opens the way for future therapeutic strategies to overcome skin inflammatory diseases.

#### *Co-Hosts*

Prof Laurent Renia  
Singapore  
Immunology  
Network/  
Prof Birgit Lane,  
Institute of Medical  
Biology, A\*STAR

#### *Date*

**Monday**  
**02 February 2015**

#### *Time*

11am – 12pm

#### *Venue*

Breakthrough  
Matrix Building  
Level 4  
Biopolis