

# Allergic sensitization in the tropics – What really matters

**Chew Fook Tim, PhD**

Department of Biological Sciences, National University of Singapore, Block S2, Level 5, Allergy and Molecular Immunology Laboratory, Functional Genomics Laboratories, Science Drive 4, Singapore

## **ABSTRACT**

House dust mite sensitization has frequently been shown to be strongly associated with the presentation of allergic airway diseases, but its significance varies geographically, by ethnicity, age-group and environment. Amongst the tropical regions, Caraballo et al., (2016) summarized the sensitization range to be between 10.8% (in a cross-sectional population in Butajira, southern Ethiopia) to more than 70% (in Singapore). While sensitization is highly prevalent in selected populations, only a proportion of them will present with clinical symptoms. Amongst asthmatic cohorts in the tropics, however, it is common to see mite sensitization prevalence of above 80 or even 90%. A key feature of mite sensitization in the tropics is the larger repertoire of specific mite allergens that the atopic individuals are sensitized to, possibly due to the presence of a more diverse repertoire of mites being co-dominantly present in the environment (e.g., the concurrent presence of both *Blomia tropicalis* and *Dermatophagoides* spp.) as well as host genetic factors (with family history being the strongest predictor of allergic diseases). This is in contrast to the predominant Group 1 and/or 2 house dust mite specific responses in the temperate regions (with more than 70% and 80% of house dust mite allergic patients having specific IgE to these allergens, respectively). Nevertheless, Batard et al., (2016) reported that between 20-47% of 1302 house dust mite allergic American, Canadian, European, and Japanese patients evaluated also have IgEs to allergens from groups 4, 5, 7, 13, 15, 21, and 23, and this would have implications for the design, production and standardization of dust mite allergen immunotherapy extracts. Additionally, Soh et al., (2017) demonstrated the presence of an unusual cause of anaphylaxis in mothers triggered by Galacto-oligosaccharides (GOS) added into infant milk formula as prebiotics, which Lee et al., (2019) has linked it to primary sensitization to *Blomia tropicalis* dust mites. This talk presents the profile of allergen sensitization in our tropical environments and illustrate the significance of these sensitization in disease presentation and outcomes.