***Respiratory allergens from house dust mite are found in gut: implication in food and respiratory allergies physiopathology***

***V. Verhasselt, MD, PhD, Head Immune Tolerance team, Université de Nice Sophia Antipolis/ Chair in Human Lactology, University of Western Australia***

Oral exposure to allergens is considered as a promising approach for allergy prevention by oral tolerance induction. Allergens from house dust mite Dermatophagoides Pteronyssinus (Der p) represent a major cause of allergic disease.
We have assessed whether oral exposure to Der p occurs physiologically and whether it induces tolerance. Der p 1 allergen was found in intestinal fluid of healthy subjects. Der p extract were shown to reduce gut epithelial barrier integrity and to stimulate immunity in gut biopsies of healthy adults. These effects did not require prior allergic sensitization and were driven by cysteine-proteases contained in Der p. We further found that Der p 1 was present in human milk. Animal studies indicated that early oral exposure to Der p allergens through breast milk induces allergic sensitization and primes for allergic disease in adulthood. Birth cohorts data showed that Der p 1 in breast milk is associated with an increased risk of allergic sensitization and respiratory allergy.
These original observations should foster studies aimed at identifying which factors control levels of HDM allergens in adult and neonate gut and affect their proteolytic activity. This research should contribute to novel approaches for allergic and gut inflammatory disease prevention.