Background: The increase prevalence of atopic disease has become a major challenge for allergists and public health authorities. The natural history of the atopic march is still very poorly understood.

Aim: Establishment of a new mouse model combining food and respiratory allergy define a way to analyse the atopic march by investigating immunological and physiological parameters.

Methods: Mice were sensitized to wheat allergens by intraperitoneal and oral administration and then exposed to house dust mite allergens in intranasal. Allergic reaction was monitored by measuring levels of IgE and histamine. Then, immune response was evaluated by cell number and cytokine production in lymphoid organs, gastro-intestinal tract and respiratory tract. Physiological parameters were also analysed by exploring paracellular and transcellular permeability as well as airway hyper-responsiveness.

Mix allergy exacerbates intestinal symptoms but not respiratory parameters:

Consecutive food and respiratory allergies amplify systemic and gut but not lung outcomes in mouse.

Bouchaud G., Gourbeyre P., Bihouée T., Aubert P., Lair D., Cheminant MA., Denery-Papini S., Neunlist M., Magnan A. and Bodinier M.

INRA, UR1268 BIA, rue de la géraudière, BP 71627, F-44316 Nantes, France
INSERM, UMR1087, Institut du thorax, Nantes, F-44000, France

Additive effect on blood marker of allergy:

Mice double exposed to allergen (HDM and wheat) showed higher level of blood marker of allergy compared to single exposed mice or control revealing additive effect.

Double allergy drives T-helper response in an organ specific manner:

Gastro-intestinal Tract

Lung

Mix allergy exacerbates intestinal symptoms but not respiratory parameters:

Alteration of intestinal physiology in mice exposed to both allergy.

Combined allergies do not influence lung function

Exposure to food and respiratory allergens induced systemic response with an organ specific effect impacting allergic pathology evolution.