

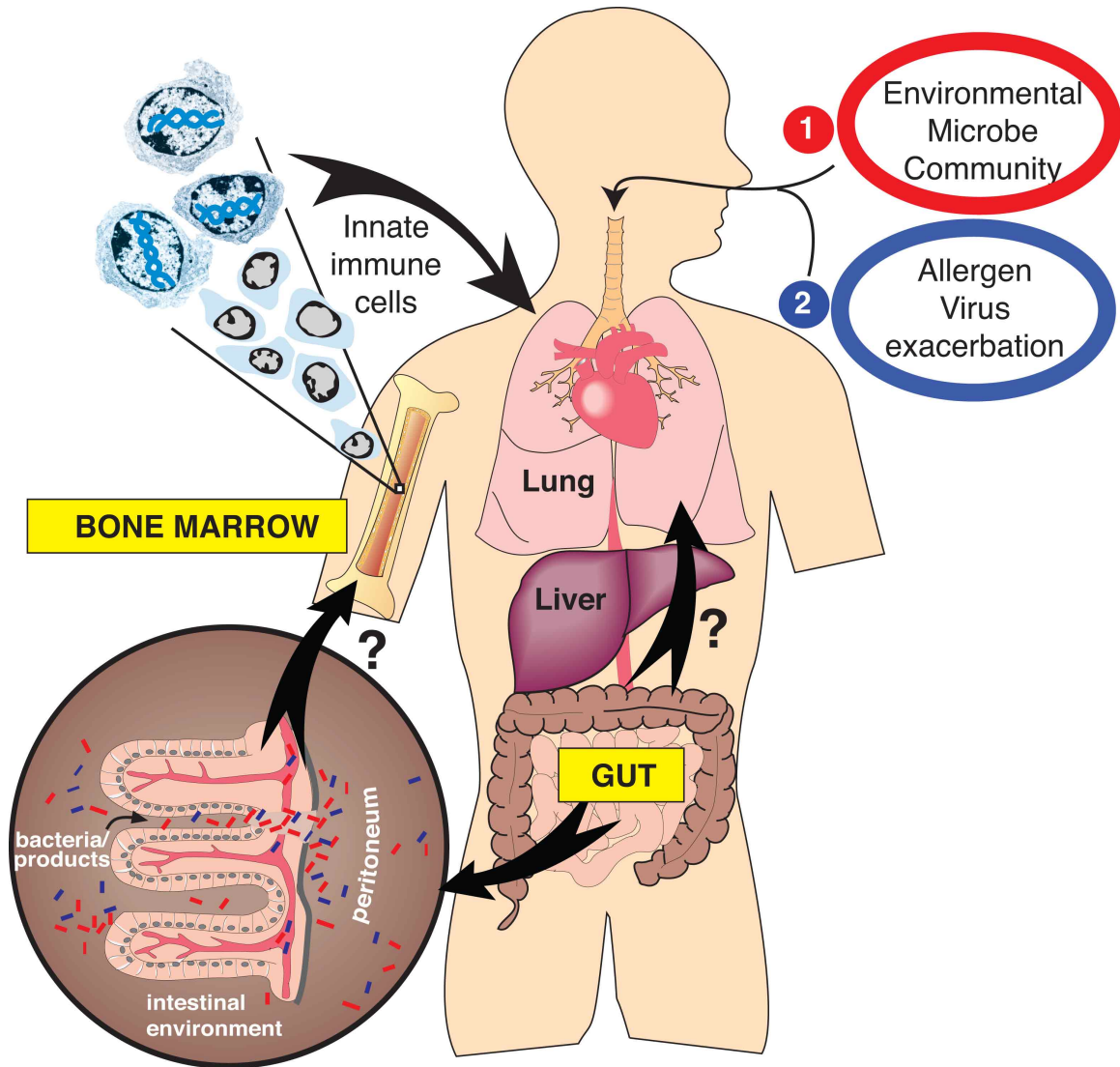
Symposium: Allergy Prevention: Do Cats and Dogs Feed Infants Microbes?

The Microbiome-Allergy Hypothesis- Experimental Evidence

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Study Objectives- Does dust from homes with pets alter the development of pulmonary disease due to changes in gut microbiota ?

- I. Evidence for microbiome-induced alteration of immune responses in animal models of disease.
- II. Establishing a murine model of house dust alteration of Allergic airway disease
 - A. Histologic changes in animals exposed to house dust with and without pets
 - B. Immunologic changes in animals exposed to house dust
- III. Basal responses to antigen presenting cells (APC) are altered in animals exposed to dust from homes with Pets.
 - A. Antigenic-specific T cells transferred into house dust exposed animals have an altered immunologic response.
 - B. Ex Vivo responses of isolated pulmonary dendritic cells are altered in pet dust exposed animals.
 - C. Alteration of Bone marrow by pet dust exposure.
- IV. Animals exposed to dust from homes with pets have an altered pulmonary response to Respiratory Syncytial Virus (RSV) infection.
 - A. Dust exposed animals have a significant reduction in RSV-induced pathology and mucus hypersecretion.
 - B. Dust exposed animals have an alteration in pulmonary cytokine responses
- V. Exposure of animals with Dust from homes with pets alters the microbiome composition and diversity.
- VI. Potential mechanisms and future directions.



Summary Slide- The alteration of gut microbiota by environmental conditions provide important signals that can regulate immunologic responses. The mechanisms appear to not only influence the local gastrointestinal responses but can influence distant sites such as the lung and bone marrow.