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**[Breathing new life into allergy research](#)**

DOI: 10.1038/mi.2010.19

Patients with asthma and hay fever often find their symptoms worsening in the spring, though pollen is normally a harmless airborne particle. A review published online this week in the journal *Mucosal Immunology* as part of a special issue about allergy details how a breakdown in lung tolerance to harmless allergens such as pollens, dander or dust can trigger the onset of the disease. The latest research into understanding the mechanisms that develop and maintain tolerance, summarized by Clare Lloyd and Jenna Murdoch, could help lead to improved treatments for asthma patients.

The pulmonary immune system contains complex control mechanisms that distinguish between harmless airborne particles and pathogens. When these control mechanisms break down or are not developed properly, harmless inhaled particles can trigger an inflammatory reaction, which often culminates in asthma. An early history of infection may be either beneficial or detrimental to the development of lung tolerance. Early exposure to pathogens, such as growing up around livestock, has been linked with a lower risk of developing asthma, while early viral infections are thought to increase the risk.

Current immunotherapies, administered under the tongue or below the skin, have been used effectively for some allergies, but success with allergic asthma has been limited. Peptide immunotherapy has recently been shown to induce allergen tolerance, although further research into the underlying mechanisms will improve the safety and efficacy of this treatment.

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**[A medicine for one's own taste?](#)**

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The prevalence of food allergies continues to increase but a better understanding of the mechanisms of oral tolerance will help the design of more effective therapies for these diseases, according to a review published online this week in the journal *Mucosal Immunology* as part of a special issue about allergy.

Wesley Burks and colleagues summarize the latest research on oral tolerance of food allergens and explain how a breakdown in this tolerance can lead to a food allergy. While there is currently no definitive therapy for this disorder, promising results have been made with immunotherapies administered either orally or under the tongue and prevention strategies are still being researched.

Oral tolerance is a key part of the gastrointestinal mucosal immune response and problems with this response, which can be influenced by maternal diet and infantile allergen exposure, can lead to food hypersensitivity. The current treatment for food allergy is the avoidance of allergens, as well as a ready supply of adrenaline in case of accidental exposure. Promising research is being undertaken on immunotherapies that involve exposing children to small but increasing amounts of allergen in order to develop a tolerance. The authors also summarize prevention strategies, which have changed from recommending complete avoidance to encouraging early exposure to potential allergens, although the effects of non-mucosal exposure are still unknown.

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