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The effects of corn and soybean grain dusts on the asthmatic phenotype using a murine model of fungal allergic asthma

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Agricultural workers and farming communities are repeatedly exposed to grain dust during harvest, transport, and storage. The recognition that this complex mixture of particulates can trigger acute respiratory distress is not new, but the ways in which it may exacerbate both immediate and long-term outcomes of allergic asthma remain unclear. The objectives of this study are to investigate the impact of repeated grain dust inhalation on the immunologic mechanisms that drive acute and chronic changes in the allergic lung. Using an inhalation model of *Aspergillus fumigatus*-induced allergic asthma in mouse, we are investigating the effect of repeated exposures to corn and soybean grain dusts (collected from the rafters of commercial grain elevators). Our early data has revealed a prominent, but short-lived, neutrophilia in the airways of naïve mice subjected to a single, 20-min dust exposure. Continuing, we will compare airway hyperresponsiveness and inflammatory responses after multiple grain dust exposures in naïve and allergic lungs, as well as the chronic architectural changes that account for much of the morbidity of long-term asthma.

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