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**Title:** Low dose diesel exhaust particle exposure exacerbates allergic asthma in young mice

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**Body:** Rationale: Recent epidemiological studies correlate traffic pollution with the development of asthma in a dose dependent manner. Diesel exhaust particles (DEP) comprise the majority of the particulate matter in air pollution, and DEP exposure augments allergic responses in adult animals. However, it is unclear if DEP exposure exacerbates allergic asthma in young animals and whether this is dose dependent. Objective: To determine if DEP exacerbates allergic asthma in young mice and whether a low dose is as effective as a high dose. Methods: Three week old Balb/c mice were exposed intratracheally 3 times a week for 3 weeks with DEP alone at a high and low dose (6 and 1.2mg/kg respectively), house dust mite (HDM; 0.8mg/kg) alone, or DEP high or low dose in combination with HDM. Data was collected 24 hours after the last exposure. DEP doses were based on exposure data from children in the Cincinnati Childhood Allergy and Air Pollution Study. Results: High dose DEP alone increased neutrophilic influx into the lungs. Low dose DEP alone did not. Both high and low dose DEP combined with HDM exposure increased antigen specific IgE, lung inflammatory cell counts, airway hyperreactivity, goblet cells, Th2 cytokine levels, T cell activation, effector T cells, and activated myeloid dendritic cells. Interestingly, both doses of DEP with HDM increased lung IL-17A levels and T cells that stained positive for both IL-13 and IL-17, which have been associated with more severe asthma. Conclusions: DEP exacerbated allergic responses in young mice and a low dose was as effective as a high dose when combined with HDM, although low dose DEP alone did not increase inflammatory cell counts compared to high dose DEP alone.