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PLEXIND1 DEFICIENCY IN MACROPHAGES EXACERBATES HOUSE DUST MITE-INDUCED ALLERGIC ASTHMA

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Background:
Semaphorin3E (Sema3E) and its receptor PlexinD1 are involved in cell migration, proliferation, and angiogenesis considered key features of asthma. The absence of Sema3E exacerbates asthma features, and treatment with recombinant Sema3E reduces inflammation and Airway Hyperresponsiveness (AHR). However, whether Sema3E-PlexinD1 axis regulates airway macrophages function in allergic asthma has not been studied.

Objective:
Therefore, we investigated the role of PlexinD1 deficient macrophage in allergic asthma.

Methods:
Genetic ablation of PlexinD1 receptor in macrophages was performed *in vivo* by crossing CX3CR1Cre/ERT with PlexinD1 floxed mice followed by tamoxifen treatment. AHR, lung tissue inflammation and remodeling of 8-10 weeks mice were measured by flexivent, flow cytometry, ELISA, and RT-PCR techniques respectively.

Results:
We found that absence of PlexinD1 in macrophage increased AHR, airway leukocytes number and Th2/Th17 cytokines response in the acute house dust mite model of allergic asthma. The expression of *α-SMA* and *muc5AC* genes was also increased in macrophage PlexinD1 deficient mice compared to WT mice.

Conclusion:
Our data suggest that macrophage via Sema3E/PlexinD1 axis negatively regulates airway inflammation, AHR, and airway remodeling in murine model of allergic asthma.