

Correspondence

Reply

To the Editor:

We thank Tam and Grayson¹ for their correspondence and for raising the interesting possibility that rhinovirus-specific IgE might play a role in mediating the severity of rhinovirus-triggered asthma exacerbation. Although our data do not exclude this possibility, we point out several lines of evidence that support the key role that allergic sensitization (mainly to house dust mite) plays in influencing the clinical phenotype of rhinovirus infection: (1) There is a robust interaction between early life sensitization to dust mite and early life rhinovirus infection that amplifies the risk of asthma inception later in life.² Interestingly, allergic sensitization likely precedes rhinovirus illness, which argues that elevated dust mite specific IgE levels are less likely a marker for the presence of rhinovirus-specific IgE, and more likely to be the causal agent.³ (2) The combination of sensitization to dust mite and rhinovirus infection is robustly and specifically associated with the frequency of asthma exacerbation.⁴ (3) *In vivo* and *in vitro* models of asthma support a causal interaction between dust mite sensitization and rhinovirus infection that influences airway physiology.⁵⁻⁷ (4) Our results demonstrate that the interaction between rhinovirus infection and either dust mite or mouse IgE levels is specific with respect to the severity of rhinovirus-triggered asthma exacerbation (ie, we did not find that rhinovirus interacts with total IgE levels or with allergen specific IgE levels for any of 7 other common allergens).⁸

We stress that none of these findings exclude a role for rhinovirus-specific IgE in rhinovirus-triggered asthma exacerbation, but provide firm evidence that allergic sensitization, in particular to dust mite, modifies the phenotype of rhinovirus infection. We agree with the point the authors raise regarding the promise of targeting IgE-initiated signaling events for the treatment of rhinovirus-triggered acute asthma exacerbation. In a forthcoming study, we report a strong association between omalizumab treatment and reduced severity of rhinovirus-triggered acute asthma exacerbation.⁹ Our study adds to previous findings that omalizumab reduces the risk of seasonal asthma

exacerbation,^{10,11} and provides the first evidence that IgE-targeted therapy might directly modify the phenotype of asthma exacerbation caused by an infectious trigger.

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Disclosure of potential conflict of interest: The authors have received a grant from the National Institutes of Health.

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<http://dx.doi.org/10.1016/j.jaci.2016.11.054>