

Scientists identify receptor for asthma-associated virus

April 6 2015

Scientists funded by the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health, have identified a cellular receptor for rhinovirus C, a cold-causing virus that is strongly associated with severe asthma attacks. A variant in the gene for this receptor previously had been linked to asthma in genetic studies, but the potential role of the receptor, called CDHR3, in asthma was unknown. The new findings help clarify the function of CDHR3 and point to a novel target for the development of prevention and treatment strategies against rhinovirus C-induced colds and asthma attacks.

Researchers led by James Gern, M.D., at the University of Wisconsin-Madison, discovered that CDHR3 recognizes and binds rhinovirus C, enabling the virus to enter human cells. Like all viruses, rhinovirus C uses the molecular machinery of host cells to replicate and become infectious. While the cellular receptors for other rhinovirus types are known, the rhinovirus C receptor had remained elusive. The scientists identified CDHR3 as a potential candidate by analyzing cells that either were or were not susceptible to rhinovirus C infection. When engineered to produce CDHR3, cells that normally were not susceptible to rhinovirus C could bind the virus and support its replication.

Notably, cells bearing a specific CDHR3 [gene variant](#) showed greatly enhanced rhinovirus C binding and produced more progeny virus than cells with normal CDHR3. In previous [genetic studies](#), this variant had been linked to a greater risk of wheezing illnesses and asthma hospitalizations during childhood. The new findings suggest that this

gene variant could be a risk factor for childhood wheezing illnesses caused by rhinovirus C, which in turn may increase the risk of developing asthma. In the future, development of drugs that block CDHR3 potentially could help prevent and treat illnesses caused by [rhinovirus C](#).

More information: YA Bochkov et al. Cadherin-related family member 3, a childhood asthma susceptibility gene product, mediates rhinovirus C binding and replication. *Proceedings of the National Academy of Sciences*, [DOI: 10.1073/pnas.1421178112](https://doi.org/10.1073/pnas.1421178112) (2015).

Provided by NIH/National Institute of Allergy and Infectious Diseases

Citation: Scientists identify receptor for asthma-associated virus (2015, April 6) retrieved 11 May 2024 from <https://medicalxpress.com/news/2015-04-scientists-receptor-asthma-associated-virus.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.