



New Viral Propagation Method Yields Insight Into Childhood Asthma

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing methods of propagating rhinovirus C (RV-C) in host cells.

Overview

In addition to the common cold, human rhinoviruses (RV) trigger nearly half of all cases of asthma exacerbation. Wheezing illnesses in infancy caused by RV are associated with a high risk of developing childhood asthma.

While the RV-A and B serotypes propagate readily in typical cell culture systems and are relatively well understood, much less is known about the RV-C serotype because it has not been successfully propagated in any cell type. RV-C strains are associated with up to half of rhinovirus illness in young children, and this failure to grow RV-C in typical cell lines has hindered efforts to develop effective antiviral strategies.

The Invention

UW–Madison researchers have developed an efficient, cost-effective method of propagating RV-C. They discovered that human cadherin-related family member 3 (CDHR3) is the receptor for RV-C and allows cell lines normally unsuceptible to HRV-C infection to support virus binding and replication.

To create cell lines capable of efficiently growing RV-C, the researchers modify the host cell so it expresses an effective amount of the CDHR3 receptor. This method enables high-throughput, large-scale production of RV-C, which in turn enables critical basic and applied research regarding this understudied pathogen.

Applications

- High-throughput, large-scale propagation of RV-C
- RV-C research and development, including development of potential antivirals

Key Benefits

- Allows RV-C replication in typical cell culture systems for the first time
- Enables production of large quantities of virus
- Provides important tools that may be used to increase our understanding of RV-C and screen for new antivirals
- Enhances research in the treatment and prevention of asthma hospitalizations and exacerbations in young children

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For More Information About the Inventors

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Related Intellectual Property

- [View Divisional Patent in PDF format.](#)

Publications

- Bochkov Y. A., Watters K., Basnet S., Sijapati S., Hill M., Palmenberg A. C. and Gern J. E. 2016. Mutations in VP1 and 3A Proteins Improve Binding and Replication of Rhinovirus C15 in HeLa-E8 Cells. Virology. 499, 350-360.
- Turunen R., Jartti T., Bochkov Y. A., Gern J. E. and Vuornen T. 2016. Rhinovirus Species and Clinical Characteristics in the First Wheezing Episode in Children. J. Med. Virol. 88, 2059-2068.

Tech Fields

- [Drug Discovery & Development : Disease models](#)
- [Research Tools : Cell lines](#)

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