

# Dog-associated house dust protects against respiratory infection linked to asthma

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House dust from homes with dogs appears to protect against infection with a common respiratory virus that is associated with the development of asthma in children. Researchers from the University of California, San Francisco, present their findings today at the 2012 General Meeting of the American Society for Microbiology.

"In this study we found that feeding mice house dust from homes that have dogs present protected them against a childhood airway infectious agent, [respiratory syncytial virus](#) (RSV). RSV infection is common in infants and can manifest as mild to severe respiratory symptoms. Severe infection in infancy is associated with a higher risk of developing childhood asthma," says Kei Fujimura, a researcher on the study.

In the study Fujimura and her colleagues compared three groups of animals: Mice fed house dust from homes with dogs before being infected with RSV, mice infected with RSV without exposure to dust and a control group of mice not infected with RSV.

"Mice fed dust did not exhibit symptoms associated with RSV-mediated airway infection, such as inflammation and mucus production. They also possessed a distinct gastrointestinal bacterial composition compared to animals not fed dust," says Fujimura.

Pet ownership, in particular dogs, has previously been associated with protection against childhood asthma development, says Fujimura. Recently she and her colleagues demonstrated that the collection of [bacterial communities](#) (the microbiome) in house dust from homes that possess a cat or dog is compositionally distinct from house dust from homes with no pets.

"This led us to speculate that microbes within dog-associated house dust may colonize the [gastrointestinal tract](#), modulate immune responses

and protect the host against the asthmagenic pathogen RSV," says Fujimura. "This study represents the first step towards determining the identity of the [microbial species](#) which confer protection against this respiratory pathogen."

Identification of the specific species and mechanisms underlying this protective effect represents a crucial step towards understanding the critical role of microbes in defining allergic disease outcomes and could lead to development of microbial-based therapies to protect against RSV and ultimately reduce the risk of [childhood asthma](#) development, says Fujimura.

Provided by American Society for Microbiology

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