

## New discovery suggests our lungs are 'innately prone' to silicosis and related diseases

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For the nearly 2 million U.S. workers exposed to silica dust each year, a new discovery may help prevent or treat the development of chronic lung diseases related to this exposure. In the September 2010 issue of the *Journal of Leukocyte Biology* scientists from Montana and Texas use mice to show for the first time that the part of our immune system responsible for keeping airways clean and free of contaminants (innate immunity) can cause inflammation and symptoms of disease. This study is significant because it is generally believed that reducing chronic inflammation will improve the quality of life for patients.

"Some of the most difficult lung diseases to treat are those that involve chronic inflammation and exposure to harmful particulates," said Celine A. Beamer, Ph.D., a researcher from University of Montana, Center for Environmental Health Sciences who was involved in the work.

"Hopefully, the information from this study will move us a step closer to curbing dangerous airway and [lung inflammation](#)."

To make this discovery, scientists treated two groups of mice with silica, a common mineral often found in sand or quartz, and then measured for the development of silicosis. The first group consisted of normal mice with a normal immune system, while the second group included mice with an inactive adaptive immune system. The normal mice developed silicosis as expected, but the disease was even more prevalent in the mice without the adaptive immune system. Silicosis is a [chronic lung](#)

[disease](#) caused by breathing in dust containing silica, often setting the stage for tuberculosis.

"The lungs are very complex and delicate organs, and many different kinds of chronic inflammation in the [respiratory tract](#) can lead to difficulty with normal daily activities," said John Wherry, Ph.D., Deputy Editor of the [Journal of Leukocyte Biology](#). "For many people, [chronic inflammation](#) is a problem that leads to the destruction of this tissue. This study gives us a much better understanding of how this inflammation occurs, and as a result, new avenues for stopping it."

**More information:** Celine A. Beamer, Christopher T. Migliaccio, Forrest Jessop, Melanie Trapkus, Dorothy Yuan, and Andrij Holian. Innate immune processes are sufficient for driving silicosis in mice. *Journal of Leukocyte Biology*. 2010; 88:547-557  
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