

Catch the fever: It'll help you fight off infection

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With cold and flu season almost here, the next time you're sick, think twice before taking something for your fever. That's because scientists have found more evidence that elevated body temperature helps certain types of immune cells to work better. This research is reported in the November 2011 issue of the *Journal of Leukocyte Biology*.

"An increase in body temperature has been known since ancient times to be associated with infection and inflammation," said Elizabeth A. Repasky, Ph.D., a researcher involved in the work from the Department of Immunology at the Roswell Park Cancer Institute in Buffalo, New York. "Since a febrile response is highly conserved in nature (even so-called [cold blooded animals](#) move to warmer places when they become ill) it would seem important that we immunologists devote more attention to this interesting response."

Scientists found that the generation and differentiation of a particular kind of lymphocyte, known as a "CD8+ cytotoxic T-cell" (capable of destroying virus-infected cells and [tumor cells](#)) is enhanced by mild fever-range hyperthermia. Specifically, their research suggests that elevated body temperature changes the T-cells' membranes which may help mediate the effects of micro-environmental temperature on cell function. To test this, researchers injected two groups of mice with an antigen, and examined the activation of T-cells following the interaction with [antigen presenting cells](#). Body temperature in half of the mice was raised by 2 degrees centigrade, while the other half maintained a normal [core body temperature](#). In the warmed mice, results showed a greater

number of the type of CD8 T-cells capable of destroying infected cells.

"Having a fever might be uncomfortable," said John Wherry, Ph.D., Deputy Editor of the [Journal of Leukocyte Biology](#), "but this research report and several others are showing that having a fever is part of an effective immune response. We had previously thought that the microbes that infect us simply can't replicate as well when we have fevers, but this new work also suggests that the immune system might be temporarily enhanced functionally when our temperatures rise with fever. Although very high body temperatures are dangerous and should be controlled, this study shows that we may need to reconsider how and when we treat most mild fevers."

More information: Thomas A. Mace, Lingwen Zhong, Casey Kilpatrick, Evan Zynda, Chen-Ting Lee, Maegan Capitano, Hans Minderman, and Elizabeth A. Repasky. Differentiation of CD8+ T cells into effector cells is enhanced by physiological range hyperthermia. *J. Leukoc Biol* November 2011 90:951-962; [doi:10.1189/jlb.0511229](https://doi.org/10.1189/jlb.0511229)

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