

New discovery gives tuberculosis vaccine a shot in the arm

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A new article appearing in the March 2009 issue of the *Journal of Leukocyte Biology* may lead to improvements in the efficacy of the current tuberculosis vaccine. Specifically, a team of Italian researchers discovered a new role for type I interferon, in which it improves the ability of dendritic cells to stimulate an immune response against the bacterium known to cause tuberculosis. The researchers speculate that type I interferon may give the current vaccine the "boost" necessary to elicit a protective immunity against the mycobacterium tuberculosis.

"The results from our work on the novel role of type I interferons should open new perspectives in their use as a vaccine adjuvant," said Eliana M. Coccia, the senior researcher involved in the work.

Coccia and her colleagues made this discovery by obtaining human dendritic cells from the blood of healthy volunteers. The cells were divided in two groups: one of which was left untreated while the other was stimulated with type I interferon (IFN-beta). After four hours, both groups were treated with the tuberculosis vaccine. A day later, the researchers analyzed the cells and found that those pretreated with type I interferon had improved function over those from the untreated group. This suggests that type I interferon may play a role in improving the vaccine's ability to prevent tuberculosis.

"Because advances in research, medicine, and technology seem to happen on a daily basis, it's easy to forget that people still struggle against diseases like tuberculosis," said E. John Wherry, Deputy Editor

of the *Journal of Leukocyte Biology*. "The finding described in this study suggest that type I interferon, an immune modulator normally associated with viral infections, could have great clinical benefit for people suffering from tuberculosis."

According to the U.S. Centers for Disease Control and Prevention, one third of the world's population is infected with the tuberculosis, with nearly 9 million people getting sick with the disease each year. Of those 9 million, almost 2 million die. The disease can spread through the air, and it usually affects the lungs. Without treatment, tuberculosis is fatal. The BCG vaccine for tuberculosis is used in many countries, but not generally recommended in the United States. The vaccine is not completely effective in preventing tuberculosis, making it imperative for scientists to find ways to improve its efficacy.

More information: Elena Giacomini, Maria Elena Remoli, Valérie Gafa, Manuela Pardini, Lanfranco Fattorini, and Eliana M. Coccia. IFN-Beta improves BCG immunogenicity by acting on DC maturation, *J Leukoc Biol* 2009 85: 462. www.jleukbio.org/cgi/content/abstract/85/3/462

Source: Federation of American Societies for Experimental Biology

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