

Tuberculosis: On the path to prevention

December 1 2009

Why do some people who are exposed to tuberculosis not become infected or develop the disease? Dr. Erwin Schurr and his team at the Research Institute from the McGill University Health Centre (RI-MUHC), in collaboration with Dr. Alexandre Alcais, from the Institut national de la santé et de la recherche médicale (INSERM) in Paris, has shed light on this question for the first time. Their results show that one or multiple genes might provide certain people with resistance to tuberculosis infection. Their findings are published in the *Journal of Experimental Medicine*.

Tuberculosis (TB) is an infectious disease caused by a bacterium called *Mycobacterium tuberculosis* (MTB). Two thirds of the world population are infected by this mycobacterium. Nevertheless, 20 per cent of people exposed to the mycobacterium are resistant to infection and can therefore, not develop the disease. "For our study, we were interested in this minority of people who live in high-exposure areas without becoming infected," said Dr. Schurr. "We tried to understand how these people develop resistance to TB infection."

Their findings show the existence of a chromosomal site, or a locus, that controls resistance to TB infection. Out of the 128 families studied, who come from an area in South Africa with high tuberculosis rates, after considering non genetic factors such as age, 20 per cent of individuals show natural resistance. "In other words, some people seem to have a particular genetic heritage that makes them naturally resistant to MTB infection," explained Dr. Alcais.

"The discovery of a genetic resistance factor is a major step forward in the fight against TB both locally and globally," said Dr. Schurr. This is a major development for people with HIV, for whom tuberculosis is a leading cause of mortality, as it is responsible for about 13% of AIDS-related deaths in the world. "Since they accelerate each other's progress, HIV and tuberculosis are partners in crime; if we can prevent infection, immune deficient patients will no longer be threatened by TB," stated Dr. Schurr.

"Right now, our challenge as researchers is to concentrate on identifying this genetic factor and its mechanisms that lead to resistance against TB infection," explained Dr. Alcais. The hope is that these genetic resistance factors can be used in the near future to prevent TB infection in the general population by stimulating the mechanism responsible for [resistance](#).

"If we can make everyone resistant to tuberculosis [infection](#), this major public health problem could be wiped off the map," concluded Dr. Schurr.

Source: McGill University Health Centre ([news](#) : [web](#))

Citation: Tuberculosis: On the path to prevention (2009, December 1) retrieved 4 May 2024 from <https://medicalxpress.com/news/2009-12-tuberculosis-path.html>

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