

HIV breakthrough: Researchers identify protein that fights immunodeficiency

March 3 2008

A Canada-U.S. research team has solved a major genetic mystery: How a protein in some people's DNA guards them against killer immune diseases such as HIV. In an advance online edition of *Nature Medicine*, the scientists explain how the protein, FOXO3a, shields against viral attacks and how the discovery will help in the development of a HIV vaccine.

"HIV infection is characterised by the slow demise of T-cells, in particular central memory cells, which can mediate lifelong protection against viruses," said lead researcher Rafick-Pierre Sékaly, a Université de Montréal professor and a researcher at the Centre Hospitalier de l'Université de Montréal and the French Institut national de la santé et de la recherche médicale (Inserm).

"Our group has found how the key protein, FOXO3a, is vital to the survival of central memory cells that are defective in HIV-infected individuals even if they are treated," added Dr. Sékaly, who produced his study with CHUM and Inserm colleagues including Elias El Haddad and Julien van Grevenynghe. Collaborators also included Jean-Pierre Routy, a McGill University Health Centre researcher and professor at McGill University and Robert S. Balderas, Vice-President of Research and Development at BD Biosciences of San Diego, CA.

Public support for the research came through Genome Canada and Génome Québec, among others, while private contributions came via a segment of BD (Becton, Dickinson and Company). "Public-private

collaborations such as this play an important role in advancing medical research," Robert S. Balderas. "BD Biosciences was pleased to provide powerful research instruments, reagents and technical expertise to support this breakthrough research."

The breakthrough emerged by studying three groups of men: One HIV-negative sample, a second HIV-positive group whose infection was successfully controlled through tritherapy and a third group whose HIV did not show any symptoms. Called elite controllers, this third group fended off infection without treatment because their immune system, which would normally be attacked by HIV, maintained its resilient immune memory through the regulation of the FOX03a protein.

"Given their perfect resistance to HIV infection, elite controllers represent the ideal study group to examine how proteins are responsible for the maintenance of an immune system with good anti-viral memory," said Dr. Haddad. "This is the first study to examine, in people rather than animals, what shields the body's immune system from infection and to pinpoint the fundamental role of FOX03a in defending the body."

Beyond HIV treatment, Dr. Sékaly said his team's discovery offers promise for other immune diseases. "The discovery of FOX03a will enable scientists to develop appropriate therapies for other viral diseases that weaken the immune system," he said, citing cancer, rheumatoid arthritis, hepatitis C, as well as organ or bone marrow transplant rejection.

Paul L'Archevêque, president and CEO of Génome Québec, lauded Dr. Sékaly's team for their breakthrough and the people who volunteered for the study. "This discovery, the first such study in humans, is a major step forward in the understanding of how our immune system responds to life-threatening infections such as HIV. This advance stems directly from research co-financed by Génome Québec, which demonstrates the

impact that genomic research can have in improving healthcare.”

Source: University of Montreal

Citation: HIV breakthrough: Researchers identify protein that fights immunodeficiency (2008, March 3) retrieved 25 April 2024 from <https://medicalxpress.com/news/2008-03-hiv-breakthrough-protein-immunodeficiency.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.