MedicalXpress

A new mechanism regulates type I interferon production in white blood cells

January 12 2009

A study from a team of researchers led by Dr. Andrew P. Makrigiannis, Director of the Molecular Immunology Research Unit at the IRCM, has identified a new mechanism regulating interferon production. This discovery, co-authored by scientists from the International Medical Center of Japan (Tokyo), the National Cancer Institute at Frederick (Maryland) and the McGill Centre for the Study of Host Resistance, was published on December 22, 2008 in the *Journal of Experimental Medicine*.

The plasmacytoid dendritic cell (pDC) is a type of white blood cell. The primary function of this cell type is to produce type I interferon when the body is infected by a virus. The pDC has special surface receptors that can detect many types of viruses. Type I interferon is thus very important for the clearance of a viral infection.

"Working with mice, we have identified a mechanism that regulates the amount of interferon that is produced by pDCs, explains Dr. Makrigiannis. That mechanism is a protein-protein interaction between surface receptor Ly49Q and the class I major histocompatibility complex (MHC) molecule."

It is known that viruses often cause a decrease of class I MHC molecules on cells. The team of scientists believes that the reason for this may be to stop interferon production by the pDCs. Thus, class I MHC recognition by Ly49Q on pDCs is necessary for the optimal activation of innate immune responses in vivo.

The discovery of this molecular strategy will very likely have a great impact in virology, and could eventually help physicians develop better therapeutic strategies to fight the infectious diseases afflicting their patients.

The online version of this article is available at: jem.rupress.org/current.shtml#IN_THIS_ISSUE

Source: Institut de recherches cliniques de Montreal