

Important advance in the treatment of cancer and viral infections

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Dr. André Veillette, a researcher at the Institut de recherches cliniques de Montréal (IRCM), and his team led by postdoctoral fellow Dr. Mario-Ernesto Cruz-Munoz, will publish in the upcoming issue of the prestigious journal *Nature Immunology* of Nature Publishing Group. This discovery could have a significant impact on the treatment of cancers and infectious diseases. Current treatments frequently achieve only limited results with these types of diseases, which affect hundreds of thousands of Canadians.

Dr. Veillette's team identified one of the basic mechanisms controlling NK ("natural killer") cell activity. Produced by the immune system, NK cells are responsible for recognizing and killing cancer cells and cells infected by viruses, such as viruses causing hepatitis and herpes. NK cell deficiency is associated with a higher incidence of cancers and serious infections.

"Our breakthrough, comments Dr. Veillette, demonstrates that a molecule known as CRACC, which is present at the surface of NK cells, increases their killer function." Using mice, the researchers have shown that CRACC greatly improves the animals' ability to eliminate cancer cells such as melanoma (a skin cancer) and lymphoma (a blood cancer). Mice lacking the CRACC gene, generated in Dr. Veillette's laboratory, were found to be more susceptible to cancer persistence. Conversely, stimulation of CRACC function was found to improve cancer cell elimination. Thus, stimulating CRACC could boost NK cell activity, helping to fight cancers. In addition, it could improve the ability to fight

infections, which are also handled by NK cells.

Increasing the activity of CRACC by gene therapy or drugs could become an option in the future to stimulate the killer function of NK cells, and to improve their capacity to destroy cancer and virus-infected cells. These approaches could be used in combination with chemotherapy and radiotherapy to increase the effectiveness of anti-cancer treatments. Teams of scientists around the world have been trying for many years without success to develop methods to increase NK cell activity. In this light, the discovery of Dr. Veillette's team opens new avenues for the treatment of cancers and viral infections.

This publication constitutes another significant milestone for Dr. Veillette, an internationally renowned immunologist. The article, which is slated for online publication on January 18 in Nature Immunology, gives undeniable evidence for the stimulatory effect of CRACC in NK cells. It is the product of over four years of intensive research by Dr. Veillette's team.

References for this article are available at: [dx.doi.org/10.138/ni.1693](https://doi.org/10.138/ni.1693) or www.nature.com/ni/journal/vaop/ncurrent/index.html

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