

Controlling inflammatory and immune responses

July 12 2012

Researchers at the IRCM, led by geneticist Dr. Jacques Drouin, recently defined the interaction between two essential proteins that control inflammation. This important breakthrough will be published in tomorrow's print edition of the scientific journal *Molecular Cell*.

[IRCM](#) scientists study glucocorticoids, a class of [steroid hormones](#) that suppress the immune system and reduce inflammation. They are used in medicine to treat diseases such as allergies, asthma, and [autoimmune diseases](#).

"In molecular biology and genetics, proteins known as transcription factors bind to DNA in order to control the expression (or transcription) of genetic information," explains Dr. Drouin, Director of the Molecular Genetics research unit at the IRCM. "Our work defined the genome-wide interaction between two transcription factors: [Stat3](#) and the glucocorticoid receptor (GR)."

While Stat3 acts on pro-inflammatory gene targets, glucocorticoids are widely used for their anti-inflammatory properties and their receptor, GR, interacts with Stat3 to control these actions. GR can be found in almost every cell in the body and regulates genes that control development, metabolism, and inflammatory and immune response.

Transcription factors can control the flow of information alone or along with other proteins, either by promoting (as an activator) or blocking (as a repressor) the recruitment of enzymes required for the expression of

specific genes. Transcription factors can bind directly to DNA or attach themselves to another DNA-bound protein.

"In some cases, the proteins will behave differently depending on how they are connected to a DNA sequence," says David Langlais, former doctoral student in Dr. Drouin's laboratory and first author of the article. "We were interested in understanding why some [transcription factors](#) could act as activators when bound directly to DNA, but act as repressors if they are recruited by another protein. The molecular basis for this dual action remained unclear until now."

Jacques Drouin's research is funded by the Canadian Institutes for Health Research (CIHR). Catherine Couture and Aurélio Balsalobre, both researchers in Dr. Drouin's laboratory, also contributed to this research project.

More information: For more information on this discovery, please refer to the article summary published online by *Molecular Cell*: [www.cell.com/molecular-cell/ab ... 1097-2765\(12\)00343-7](http://www.cell.com/molecular-cell/ab...1097-2765(12)00343-7)

Provided by Institut de recherches cliniques de Montreal

Citation: Controlling inflammatory and immune responses (2012, July 12) retrieved 26 April 2024 from <https://phys.org/news/2012-07-inflammatory-immune-responses.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.