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Researchers pinpoint role of key proteins in Crohn's Disease

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(Medical Xpress) -- Researchers at the University of Toronto have discovered the role the interactions between key proteins plays in the body's response to Crohn's Disease - a revelation that may lead to the development of new therapies for patients.

In a paper published online by the journal Nature Medicine, Professor Stephen Girardin in the Department of Laboratory Medicine and Pathobiology and Dana Philpott of the Department of Immunology, as well as colleagues at St. Michael's Hospital, examined the role nucleotide-binding oligomerization domain proteins - known as NOD proteins - play in the body's response to intestinal bacteria linked to Crohn's Disease.

Crohn's disease (CD) is a chronic inflammatory bowel disease (IBD), whose incidence has grown in the past century, principally in industrialized countries. CD is characterized by flares of inflammation that are followed by periods of remission, although the intensity usually grows with age. Although available therapy has improved handling of the disease progression, the exact mechanism that causes CD is not clear, and there are no effective preventive measures.

The causes of CD are not known and hotly debated, but it is believed to be a combination of environmental and genetic factors. The first susceptibility gene, known as NOD2, has been shown to be a key sensor of bacteria. Girardin and his team found that NOD proteins play a crucial role in triggering another set of signaling molecules, known as

IL-17/IL-22 cykotines, which regulate the mucosal barrier defense - the natural response to intestinal bacteria. When the signaling between NOD2 and IL-17/IL-22 misfires, that interferes with the body's natural ability to fight off bacterial infection. The key for future research will be to examine that interaction more closely and see if there are ways to maintain the body's healthy defense to infection.

"We believe this is significant for Crohn's Disease research, as it ties two pathways that have been shown genetically to confer susceptibility to the disease," said Girardin. "We have highlighted the role the interaction between NOD and IL-17 plays in the functioning of the natural intestinal defense, and it suggests that focusing on this pathway may help prevent CD and inspire the development of new therapeutic interventions for the disease."

Provided by University of Toronto

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