

Major discovery opens door to leishmania treatment

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Leishmania is a deadly parasitic disease that affects over 12 million people worldwide, with more than 2 million new cases reported every year. Until recently, scientists were unsure exactly how the parasite survives inside human cells. That mystery has now been solved according to a new study published in *Science Signaling* by a team led by Dr. Martin Olivier - a scientist at the Research Institute of the McGill University Health Centre (RI-MUHC) and McGill University. It is hoped the new study will lead to the development of the first prophylactic treatment for leishmania.

Leishmania is typically a sub-tropical and tropical infectious disease transmitted through the bite of female phlebotomine sandflies. The parasites enter the bloodstream and are ingested by macrophage - white blood cells - where they block immune function and multiply, spreading to other tissues in the body. Leishmania can occur in cutaneous forms, which are generally curable, as well as in a more dangerous - and potentially fatal - visceral form.

The researchers discovered that a metalloprotease - a molecule called GP63 - found on the surface of the parasite, plays a role in neutralizing the macrophage's defences. "Our results demonstrate the mechanism through which the GP63 protease alters the function of the macrophages by activating its own negative regulatory mechanisms," says Dr. Olivier. "The infected cells act 'frozen', which hinders the body's innate inflammatory immune response and leads to infection."

The work is significant in that it is the first study that explains how the leishmania parasite blocks the [immune function](#) of macrophages. "Our research indicates that the GP63 protease is the target of choice for innovative future treatments, in terms of prevention," says Dr. Olivier.

The GP63 protease directly activates other key molecules that negatively regulate the function of the [host cell](#). "Better control over the activation of these host molecules could be one promising approach to treating leishmania as well as other infectious diseases that use similar infection strategies," he added.

Source: McGill University ([news](#) : [web](#))

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