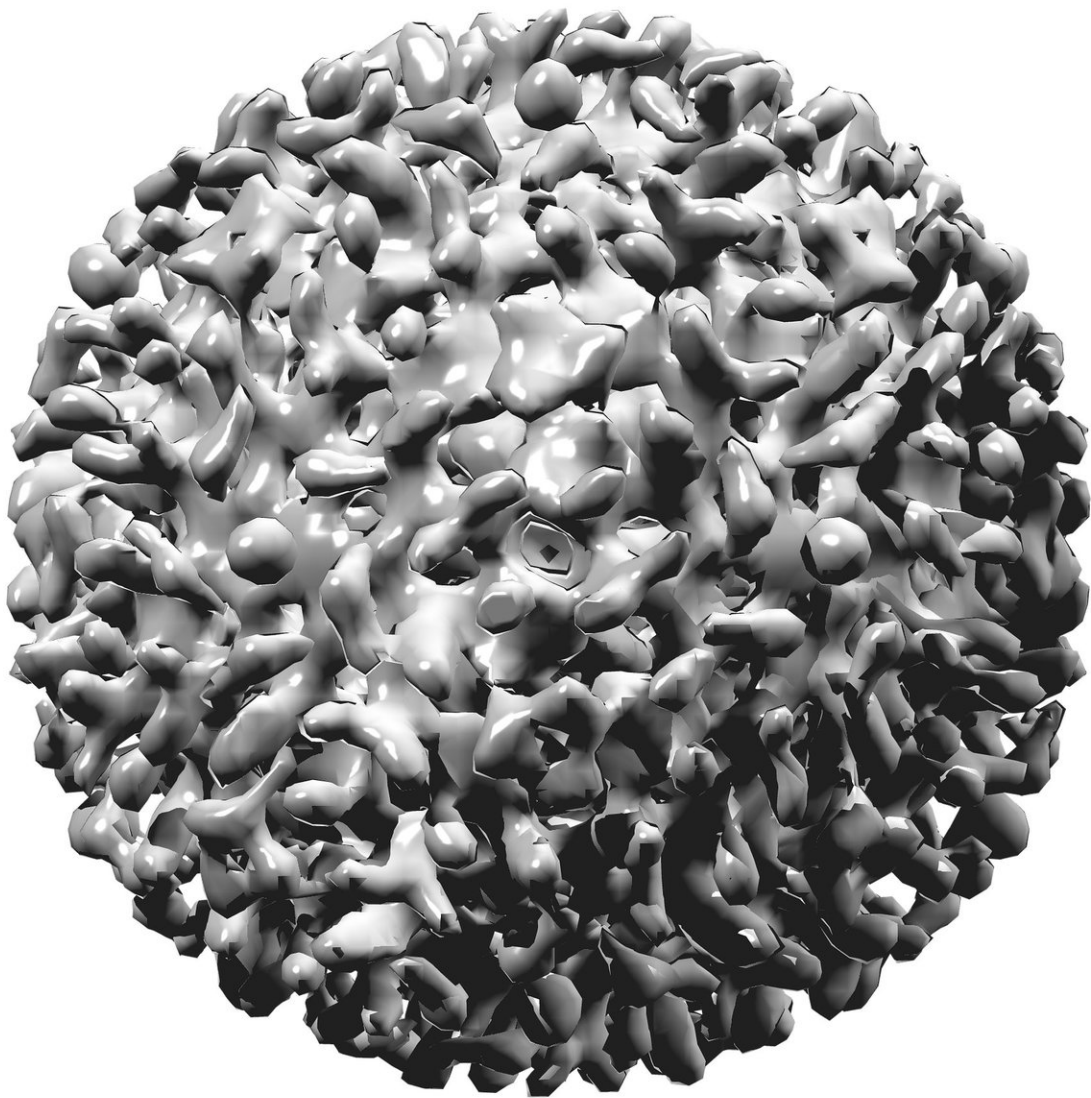


# A promising discovery could lead to better treatment for Hepatitis C

October 22 2020

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Virologists at Institut national de la recherche scientifique (INRS) have identified a critical role played by a cellular protein in the progression of Hepatitis C virus infection, paving the way for more effective treatment. No vaccine currently exists for Hepatitis C virus infection, which affects more than 130 million people worldwide and nearly 250,000 Canadians. Antivirals exist but are expensive and not readily available in developing countries, where the disease is most prevalent.

Professor Terence Ndonyi Bukong and his team of virologists, in partnership with Professor Patrick Labonté, discovered this potential therapeutic target. They unveiled that the [cellular protein](#) RTN3 was involved in mediating an important pathway essential in Hepatitis C virus disease development, and progression. This promising discovery could lead to better treatments for the disease, which kills approximately 500,000 people annually.

## Master of disguise

Normally, the [immune system](#) needs to recognize a virus to attack it and prevent infection. The Hepatitis C virus, however, is a master of disguise. It moves around, undetected, in exosomes, which are cell-released microvesicles vesicles that normally function in cellular communication, transport, and cellular waste disposal. This novel research revealed that the Hepatitis C viruses interact with a key area of the RTN3 protein utilizing it to insert their viral RNA into exosomes.

"We are the first researchers to demonstrate the exosomal role that this protein plays in hepatitis C pathogenesis," said Dr. Bukong, who led the study published in the journal *PLOS One*. "By identifying the areas of the

protein that lead to the formation of an infectious exosome, we can now look for distinctive molecules that block the interaction with the viral RNA." He went on to say, "This would prevent the viral RNA from being able to enter exosomes and hide from the body's immune system."

The discovery of this interaction between the [virus](#) and the RTN3 protein opens the door to more research on other viruses that use exosomes to evade detection. "For example, studies have shown that HIV, Zika, and Hepatitis B viruses also hide inside exosomes. This disguise creates a problem for the optimal function of vaccines because even if antibodies are developed, they are unable to block viral infection or transmission," Dr. Bukong explained. "If the RTN3 [protein](#) also plays an important role in these other illnesses, it could help us make more effective treatments, and, potentially, more effective vaccines."

**More information:** Jingjing Li et al, Reticulon-3 modulates the incorporation of replication competent hepatitis C virus molecules for release inside infectious exosomes, *PLOS ONE* (2020). [DOI: 10.1371/journal.pone.0239153](https://doi.org/10.1371/journal.pone.0239153)

Provided by Institut national de la recherche scientifique - INRS

Citation: A promising discovery could lead to better treatment for Hepatitis C (2020, October 22) retrieved 6 May 2024 from <https://medicalxpress.com/news/2020-10-discovery-treatment-hepatitis.html>

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