

Scientists see Norwalk virus' Achilles heel

March 19 2008

Using the Canadian Light Source synchrotron, an international team led by University of Calgary researcher Ken Ng has determined the detailed structure of the enzyme the Norwalk virus uses to make copies of its genetic code in order to replicate itself. The information is crucial to developing drugs that could be used to treat outbreaks of Norwalk and other related viruses.

The Norwalk virus uses the enzyme, RNA polymerase, to make new strands of RNA using an existing RNA strand as a template. The copying, which occurs within an area of the enzyme called an active site, can be blocked—or inhibited—with a drug molecule shaped to fit the site, like a key in a key hole.

“These are the first structures showing the enzyme doing its job interacting with RNA,” says Professor Ng. “These structures provide ideas of how we could develop new antiviral drugs that block the enzyme’s activity.”

The group includes scientists from the University of Calgary, University of Oviedo (Spain), Penn State University, the University of Kansas and the Canadian Light Source. Their work appears in the March 21 issue of the *Journal of Biological Chemistry*.

Outbreaks of Norwalk virus are notorious for the havoc they can cause to people living in close quarters, from cruise ships to hospital wards, often causing severe dehydration due to vomiting and diarrhea. The currently untreatable bug belongs to a superfamily of viruses that stores

their genetic code as RNA, including polio, hepatitis C, foot-and-mouth disease and even the common cold. The problem with all of these viruses is the lack of effective treatments.

“The best doctors can do with Norwalk patients is treat the symptoms. We have the polio vaccine, but many other serious diseases, like hepatitis C, lack effective treatments,” explains Professor Ng. “This polymerase is closely related in all of these viruses, so an inhibitor drug that works against Norwalk virus could also work in treating hepatitis C.”

Source: Canadian Light Source

Citation: Scientists see Norwalk virus' Achilles heel (2008, March 19) retrieved 19 April 2024 from <https://phys.org/news/2008-03-scientists-norwalk-virus-achilles-heel.html>

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