New HIV Drug Discovery

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In their discovery of a new way to inhibit formation of HIV's protease enzyme, scientists may have identified a new drug target, according to new data published in the August 2008 issue of *Biopolymers* and reported today by *ScienceDaily*.

Protease is a doughnut-shaped enzyme involved in processing viral proteins and assembling them into new infectious viruses. It is currently the target of a handful of drugs called protease inhibitors, all of which bind to and block the hole in the doughnut shape.

Heather Carlson, PhD, a professor of chemistry at the University of Michigan, and her colleagues used computer models of the protease enzyme to discover a new part of the enzyme's structure that would be vulnerable to chemical inhibition. They found that before the protease assumes its doughnut shape, two ends have to bind together to close the circle. Where these two flaps join is the site that Carlson's team chose to focus on.

Using their computer models, they developed a chemical inhibitor that was successful at stopping the two ends from joining and the enzyme from maturing into its final shape. The chemical inhibitor they developed is too weak to work as a drug in the human body, but Carlson's discovery does offer a potential new target for drug development.