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Drug design success propels efforts to fight HIV with a combination of two FDA-approved drugs

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A University of Minnesota research team featuring researchers from the Institute for Molecular Virology, School of Dentistry and Center for Drug Design has developed a new delivery system for a combination of two FDA approved drugs that may serve as an effective treatment for the human immunodeficiency virus (HIV).

The discovery, which allows for a combination of decitabine and gemcitabine to be delivered in pill form, marks a major step forward in patient feasibility for the drugs, which previously had been available solely via injection or intravenous therapy (IV).

The study, coauthored by Christine Clouser, Ph.D., Laurent Bonnac, Ph.D., Louis Mansky, Ph.D., and Steven Patterson, Ph.D., can be found "online first" in the journal *Antiviral Chemistry & Chemotherapy*.

"If you have a condition that requires you to take a medication everyday, as many patients with HIV do, you wouldn't want to have to take that medication via daily injection," said Steven Patterson, Ph.D., professor at the Center for Drug Design at the University of Minnesota. "This finding is a big step in demonstrating this treatment could be taken as a pill, similar to other HIV drugs, and is suitable for eventual clinical translation."

University of Minnesota researchers first announced decitabine and

gemcitabine could potentially combine to treat HIV in research published in August 2010. The drug combination was shown to work by lethal mutagenesis that could obliterate HIV by causing the virus to mutate to a point where it was no longer infectious. For some patients, HIV's ability to quickly mutate and evolve can result in drug resistance. For patients who have developed resistance to currently available HIV treatments, the decitabine-gemcitabine drug combination could prove an effective alternative and secondary line of defense.

In addition to a potentially effective treatment for humans with HIV, the combination also shows potential to treat cats with leukemia.

"There's still a lot of work that needs to be done to demonstrate the safety and efficacy of this drug combination before human clinical trials can begin," said Patterson. "But we're optimistic that we're moving forward."

Provided by University of Minnesota