

New drug stimulates immune system to kill infected cells in animal model of hepatitis B infection

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A novel drug developed by Gilead Sciences and tested in an animal model at the Texas Biomedical Research Institute in San Antonio suppresses hepatitis B virus infection by stimulating the immune system and inducing loss of infected cells.

In a study conducted at Texas Biomed's Southwest National Primate Research Center, researchers found that the immune modulator GS-9620, which targets a receptor on immune cells, reduced both the virus levels and the number of infected [liver cells](#) in chimpanzees chronically infected with [hepatitis B](#) virus ([HBV](#)). Chimpanzees are the only species other than humans that can be infected by HBV. Therefore, the results from this study were critical in moving the drug forward to human clinical trials which are now in progress.

The new report, co-authored by scientists from Texas Biomed and Gilead Sciences, appears in the May issue of [Gastroenterology](#). Gilead researchers had previously demonstrated that the same therapy could induce a cure of hepatitis infection in woodchucks that were chronically infected with a virus similar to human HBV.

"This is an important proof-of-concept study demonstrating that the therapy stimulates the immune system to suppress the virus and eliminate infected liver cells," said co-author Robert E. Lanford, Ph.D., of Texas Biomed. "One of the key observations was that the therapy

continued to suppress virus levels for months after therapy was stopped.

The current therapy for HBV infection targets the virus and works very well at suppressing viral replication and delaying progression of [liver disease](#), but it is a lifelong therapy that does not provide a cure.

"This GS-9620 therapy represents the first conceptually new treatment for HBV in more than a decade, and combining it with the existing antiviral therapy could be transformative in dealing with this disease," stated Lanford.

The Gilead drug binds a receptor called Toll-Like Receptor 7 that is present in [immune cells](#). The receptor normally recognizes invading viruses and triggers the immune system to suppress [viral replication](#) by the innate immune response and kill infected cells by the adaptive immune response, thus orchestrating both arms of the immune system.

HBV damages the liver, leading to cirrhosis and liver cancer. Liver cancer is the fifth most common cancer worldwide and the third most common cause of cancer death. According to the United States Centers for Disease Control and Prevention (CDC), up to 1.4 million Americans are chronically infected with HBV.

The World Health Organization estimates that two billion people have been infected with the [hepatitis B virus](#), resulting in more than 240 million people with chronic infections and 620,000 deaths every year.

Provided by Texas Biomedical Research Institute

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