NYC Street Rats Could Pave Way for Hepatitis C Vaccine

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Researchers at Rockefeller University say they have found a virus that resembles hepatitis C virus (HCV) in the city's rat and mouse populations and have since used it to develop the first animal model of the human liver virus. The breakthrough has the potential to significantly accelerate research into a hepatitis C vaccine, ScienceDaily reports.

Until now, only humans and chimpanzees could be used to study the interaction between hepatitis C and the immune system. Because chimps are endangered, prohibited for lab use in the United States and expensive to test with, HCV researchers typically have to rely on limited blood samples and biopsies from infected patients to study the virus, which has made it difficult to test new vaccines.

However, in 2014, there was an unexpected breakthrough. According to a recent study published in the journal Science, while studying the pathogens that infect street rats in New York City, scientists at Columbia University discovered a rodent hepacivirus that appears to belong to the same family of viruses as human HCV. Since then, researchers at Rockefeller University have been working to infect humanized mice with the disease (the preferred animal model for modern biological research), in an effort to study the effects of the virus.

According to the latest update on their progress, Rockefeller researchers say they have been able to isolate the hepacivirus (which mimics many features of human hepatitis C virus) from rats and infect mice with it. They are now using their animal models to gain insight into how hepatitis C progresses in the body and to understand how the body reacts to an acute infection.

So far, one notable difference in the animals' response is that most are able to recover fully from the acute form of the infection, while only immune-compromised animals become chronically infected. Among humans, most individuals are unable to clear the virus on their own and ultimately develop a chronic form of hepatitis C.

Moving forward, researchers say they will continue studying their new animal model to unravel the mechanisms of liver infection, virus clearance and the body's natural defense mechanisms against viral hepatitis. This research should prove valuable as investigators work to develop and test hepatitis C vaccines on the mice—a breakthrough that could help save millions of lives worldwide.