

New mouse viruses could aid hepatitis research

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Newly discovered mouse viruses could pave the way for future progress in hepatitis research, enabling scientists to study human disease and vaccines in the ultimate lab animal. In a study to be published in *mBio*, the online open-access journal of the American Society for Microbiology, scientists describe their search for viruses related to the human hepatitis C virus (HCV) and human pegiviruses (HPgV) in frozen stocks of wild mice. The discovery of several new species of hepaciviruses and pegiviruses that are closely related to human viruses suggests they might be used to study these diseases and potential vaccines in mice, without the need for human volunteers.

About 2% of the population is infected with the [hepatitis C virus](#) and 5% is infected with human pegiviruses, but it's been difficult to study [new drugs](#) or develop vaccines against these infections because the human strains do not infect animals that can be studied in the lab. Lead author Amit Kapoor of Columbia University says it surprised him to find similar viruses in mice.

"People have been waiting for decades to find something like this. It was shocking for me to see that the viruses are there and there are so many of them," says Kapoor.

Kapoor and his colleagues screened an archive of more than 400 frozen rodents, mostly [deer mice](#), for viruses related to the human [hepatitis C](#) virus and human pegiviruses. The search turned up a number of candidates, and they selected two for complete [genome sequencing](#): a

rodent hepacivirus (RHV) found in deer mice and a rodent pegivirus (RPgV) found in a white-throated woodrat. Sequencing confirmed that the viruses are very closely related to human strains but they represent several [novel species](#) in the Hepacivirus and Pegivirus genera within the family Flaviviridae.

These rodent viruses have genes, proteins, and translational elements that closely mirror those found in human hepaciviruses and pegiviruses, suggesting they have great potential for use in the lab. Animal models of hepatitis would help scientists explore the ways these viruses causes disease and aid in the design of treatments and vaccines. Human pegiviruses, on the other hand, have unknown effects, so studying how they work in rodents could well point the way to what they might do in the human body and why so many people are infected.

Kapoor's lab is now focused on exploring the biology of these viruses. "We are trying to infect deer mice, to study biological properties of these hepatitis C-like viruses," says Kapoor. "And if we find one of these viruses is hepatotropic [having an attraction to the liver] and causes disease similar to hepatitis C, that would be a big step forward in understanding hepatitis C-induced pathology in humans."

Provided by American Society for Microbiology

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