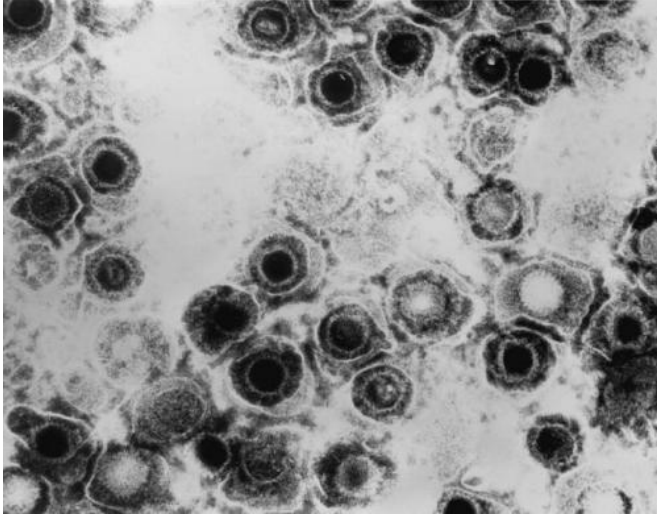


Novel herpes virus isolated from bat cells

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Herpes simplex virus. Credit: CDC

Researchers from Maryland and New York have identified a novel herpes virus in cells taken from a bat. The work, published this week in *mSphere*, the American Society for Microbiology's new open access journal, could lead to better understanding of the biology of these viruses and why bats serve as hosts for a number of viruses that can potentially transfer to humans.

The investigators set out to study bats' immune response to infection, looking at [cells](#) from a tumor taken from the wing of an adult female bat found in a cave in Texas. While using a laboratory technique called next-generation sequencing to study genetic material from the cells, they quickly noticed that a large number of genes expressed weren't bat genes but instead were genes related to herpes viruses.

Through further lab experiments, they isolated and characterized a novel bat gammaherpesvirus, bat gammaherpesvirus 8 (BGHV8). In humans, gammaherpesviruses like Epstein-Barr virus are known for causing diseases like infectious mononucleosis and some cancers. The

researchers were able to assemble a genome of nearly 130,000 base pairs of [genetic material](#) for the virus, and to show that the virus was capable of multiplying in the lab and of infecting human and animal cell lines.

"The cool thing about this study is that it was so surprising," said senior study author Christopher Basler, PhD, a professor of microbiology at the Icahn School of Medicine at Mount Sinai, New York. "We didn't go looking for a virus and really, by accident, we found this new virus, and it turned out to be the first replicating bat gammaherpesvirus. We think it's exciting for people interested in studying how bats interact with viruses."

During the lab studies, investigators took liquid growing on top of the bat cell line and put it onto another line of cells called Vero cells that allow viruses to reproduce. Within 18 hours, the Vero cells were dead, said lead study author Reed Shabman, PhD, an assistant professor and infectious disease investigator at the J. Craig Venter Institute in Rockville, Md. BGHV8 cells also were able to infect isolated human lung and human liver cells. Not only could the researchers see viral particles in the bat cells using an electron microscope, but studying the virus' family tree, they determined that BGHV8 is similar to but distinct from other gammaherpesviruses.

"This is the first replicating bat gammaherpesvirus that's been isolated," Shabman said. "Most labs just have bits and pieces of a virus."

A big question is why bats are repeatedly associated with infections that transfer to humans, Basler said. "We have very few tools to study bats' [immune response](#) to viruses. This natural bat [virus](#) is actually going to prove to be useful in understanding and probing how bats respond to natural infections and microorganisms that can cause disease."

Herpes viruses encode many genes that help the viruses evade immune responses and persist,

Basler added. Having the genome for BGHV8 will allow the team to probe specific antiviral functions to see how they work in [bats](#) and learn how these mechanisms are similar to or different from those of humans.

Provided by American Society for Microbiology

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