

Diverse intestinal viruses may play a role in AIDS progression

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In monkeys and humans with AIDS, damage to the gastrointestinal tract is common, contributing to activation of the immune system, progressive immune deficiency, and ultimately advanced AIDS. How this gastric damage occurs has remained a mystery, but now researchers reporting in the Cell Press journal *Cell* provide new clues, implicating the presence of potentially pathogenic virus species other than the main virus that causes AIDS. The findings could provide an opportunity to explain and eventually intervene in the processes that lead to AIDS progression.

To investigate what causes gastrointestinal damage in monkeys and humans with AIDS, researchers used a sequencing method that allows them to obtain genetic sequences of all of the bacterial, viral, and other organisms residing in the gastrointestinal tract. Using this technique, they examined the feces of monkeys with SIV-induced AIDS, monkeys without SIV infection, and monkeys infected with SIV strains that do not cause AIDS. (SIV is the monkey counterpart to HIV.)

"We found that the [gastrointestinal tract](#) of the animals with AIDS contained a large number of previously undescribed viruses—including potential pathogens, but we did not see any obvious changes in the bacteria. This means that previously unrecognized viruses may contribute to AIDS [disease progression](#) in monkeys," explains co-author Dr. Dan Barouch, of Harvard Medical School and the Beth Israel Deaconess Medical Center, in Boston. It's not clear why monkeys with AIDS have more intestinal viruses, but it may be related to their compromised immune system.

The researchers also noted that some of the viruses in the feces of monkeys with AIDS were also found circulating in the animals' blood. In addition, many were RNA viruses, meaning that their genetic material is made up of RNA rather than DNA. "This is the first time anyone has looked

at both DNA- and RNA-based organisms in the fecal matter in association with AIDS. The striking finding of so many [RNA viruses](#) to go along with DNA viruses opens up the broader issue of whether we need to rethink how we study the genomes of microorganisms that may affect disease," says senior author Dr. Herbert Virgin, of the Washington University School of Medicine, in Saint Louis.

In addition to providing new information on how AIDS advances, and therefore how to potentially intervene to slow it down, the results indicate that the viruses found in AIDS patients' intestines could indicate how progressive their disease will be.

More information: Handley et al.: "Pathogenic simian immunodeficiency virus infection is associated with expansion of the enteric virome." [DOI:10.1016/j.cell.2012.09.024](https://doi.org/10.1016/j.cell.2012.09.024)

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