New virus found in one-third of all countries may have coevolved with human lineage

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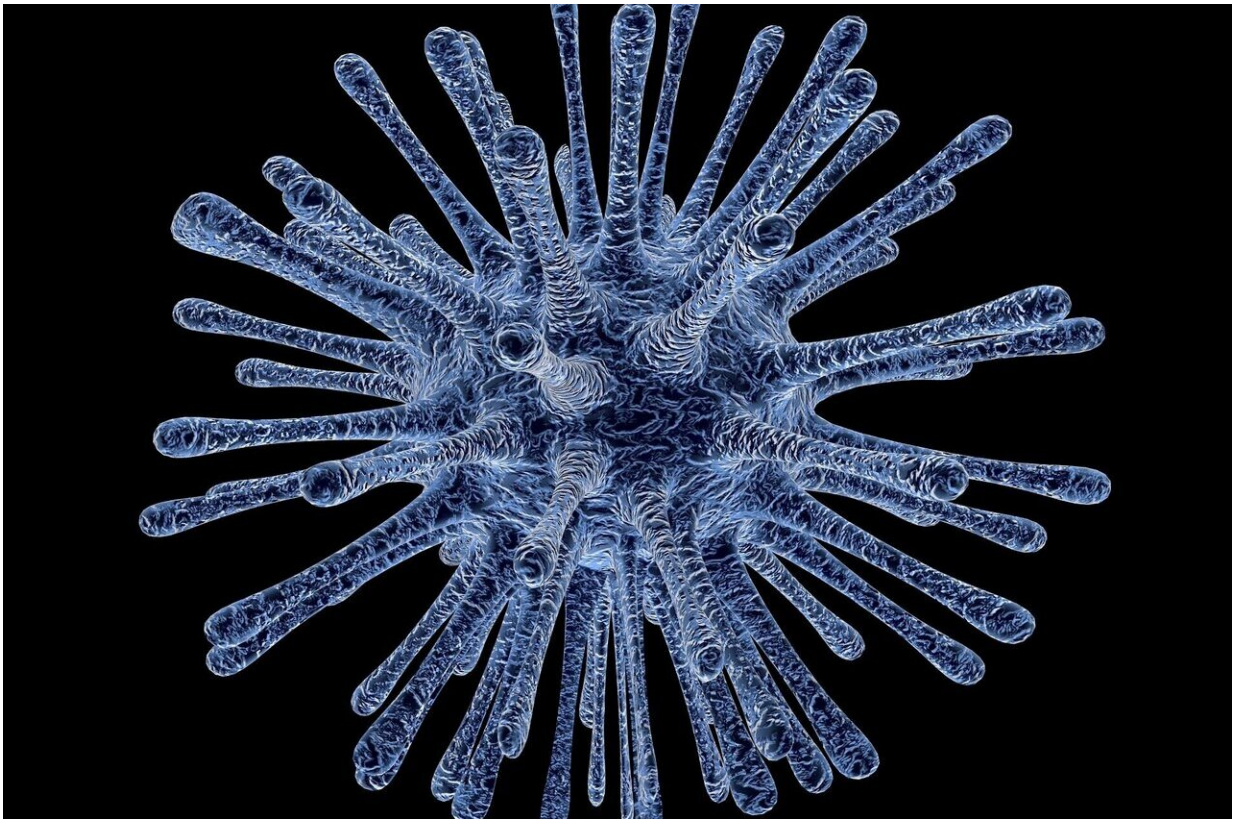

Credit: CC0 Public Domain

In 2014, a virus called crAssphage that infects bacteria was discovered as part of the body's intestinal environment. Now, a new study has investigated the origin and evolution of this virus, which may have

coevolved with human lineage.

Published in *Nature Microbiology*, a recent study shows that the virus was found in the sewage of more than one-third of the world's countries. Additionally, the makeup of the virus can vary depending on in which country and city someone resides.

"The virus is both highly abundant in the human gut and represents an entirely new viral family. With this study, we were able to expand our understanding of the diversity and evolutionary history of the human microbiome globally," said Kyle Bibby, co-author of the study and associate professor and Wanzek Collegiate Chair in the Department of Civil and Environmental Engineering and Earth Sciences. "Our team at Notre Dame has been evaluating the potential uses of this newly identified virus and is developing it as an alternative to E. coli or other fecal indicator bacteria that are not specific to humans, as an indicator of fecal pollution."

The research was completed through a global collaboration of more than 115 scientists from 65 countries, allowing for the collection of a significant amount of sequencing data. This information was sampled from a variety of volunteers and from sewage samplings around the world. Genetic material data were also collected from primates as well as three pre-Columbian Andean mummies and a Tyrollean glacier mummy, which had 5,300-year-old intestinal content.

"We are in debt to all the amazing colleagues around the world who helped us explore the global diversity of this unique virus," said Robert Edwards, project lead and professor of computer science and biology from San Diego State University. "This is truly a world first in the global scope and nature of the project."

More information: Robert A. Edwards et al. Global phylogeography

and ancient evolution of the widespread human gut virus crAssphage, *Nature Microbiology* (2019). DOI: 10.1038/s41564-019-0494-6