Viruses in Hot Springs Use Similar Line of Attack as HIV

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The process by which viruses, including HIV and Ebola, hijack cellular proteins is parallel to that found in viruses infecting organisms that grow in volcanic hot springs, which are divided from humans by a 2-billion-year evolutionary gap. Publishing their findings in the Proceedings of the National Academy of Sciences, researchers studied how viruses co-opt protein complexes in micro-organisms called archaea that grow in volcanic springs such as those found in Yellowstone National Park. These protein complexes are known as the Endosomal Sorting Complexes Required for Transport (ESCRT); and, just as with HIV, viruses that infect archaea depend on ESCRT in order to replicate.

“The new work yields insight into the evolution of the relationship between hosts and viruses and, more importantly, presents us with a new and simple model system to study how viruses can hijack and utilize cellular machineries,” Stephen D. Bell, a professor in the Indiana University department of molecular and cellular biochemistry and department of biology and a co-lead author of the study, said in a release.

The scientists studied interactions between a virus called *Sulfolobus* turreted icosahedral virus (STIV) that infects *Sulfolobus solfataricus*, a kind of archaea that survives in very hot environments. They were able to determine that viral proteins were interacting with the ESCRT proteins.

“These parallels support the idea that the cellular ESCRT is ancient and that it is likely to have evolved prior to archaea and eukarya separating to become different domains of life,” Bell said, referring to archaea’s division from eukaryotes, which include plants and animals.

To read the study abstract, click here.

To read a release on the study, click here.

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