

Newly discovered Polinton-like viruses significantly increase


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Video Byte

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Abstract

While studying the virus community of a lake in the Stubai Alps, scientists made an unexpected discovery – a new group of viruses, known as Polinton-like viruses. Polintons (also known as “Mavericks”) are the largest mobile elements in eukaryotic genomes. Many Polintons also encode viral genes, suggesting they may be ancestors of eukaryotic dsDNA viruses. No Polintons have been observed outside of cells. Using metavirome analyses of the viruses found in the lake, the researchers identified viral genes belonging to 82 new Polinton-like viruses. This data was then used in a wider search that identified 543 further genomes from other locations and 16 genomes integrated within eukaryotic genomes. Further analysis defined large groups of Polinton-like viruses and linked them to diverse eukaryotic hosts. The results of this study increase the number of known Polinton-like viruses by 25-fold, identify 5 new major groups of viruses associated with a wide range of unicellular eukaryotic hosts, and suggest that Polinton-like viruses can exist in aquatic environments outside of cells. Further studies should uncover the full global diversity of these eukaryotic viruses.