VIRAL NUCLEASE ESCAPE ELEMENT

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BRIEF DESCRIPTION

This is 'nuclease escape element' that protects any given mRNA from viral-mediated cleavage. It is the first element that differentiates susceptibility to viral endonucleases from cellular endonucleases.

SUGGESTED USES

This sequence could be fused to any mRNA of interest in a location that does not disrupt the coding sequence, leading to protection of that mRNA during infection. This could be used to maintain expression of anti-viral genes that would normally be down regulated by the virus, or reporter genes to track various events during infection. It can also be used as a tool to better understand how viral endonucleases differ from their cellular counterparts in recognition and targeting of mRNA for degradation. This sequence can be used with viruses including Kaposi's sarcoma-associated herpesvirus, Epstein Barr virus, herpes simplex virus, and influenza A. These viruses all contain proteins called 'endonucleases' that target the majority of cellular mRNAs for cleavage and degradation. This is important for these pathogenic human viruses, in part, because it helps them to avoid detection by the host immune response by dampening expression of immune stimulatory genes.

ADVANTAGES

This sequence is transferrable, in that we can append it to other mRNAs normally cleaved by the viral endonucleases and it prevents their cleavage. It can also be used as a tool to better understand how viral endonucleases differ from their cellular counterparts in recognition and targeting of mRNA for degradation. While this is the first discovery of an RNA functioning in this manner, it is likely that other such elements exist and could be similarly developed and co-opted to subvert virus-induced degradation.

RELATED MATERIALS

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OTHER INFORMATION

KEYWORDS

Viral endonucleases, MRNA

CATEGORIZED AS

» **Biotechnology**

» Genomics

» Health

» Proteomics

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