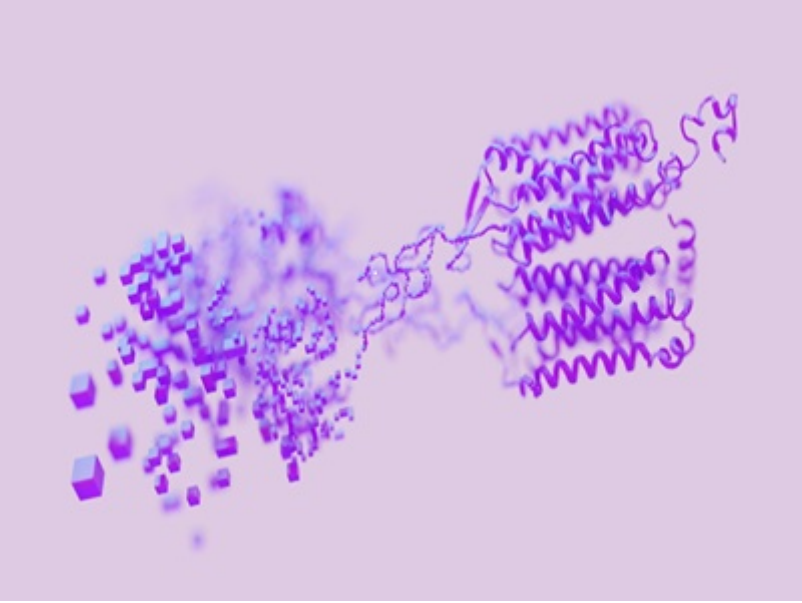
Computationally Designed Inhibitor for Epstein-Barr Virus BHRF1 Protein

The technology is a novel polypeptide designed to inhibit the Epstein-Barr virus BHRF1 protein, inducing apoptosis in infected cells and offering a potential therapeutic approach for Epstein-Barr-related diseases and cancers.



What is the Problem?

Epstein-Barr virus (EBV) is associated with various cancers, including Burkitt's lymphoma and nasopharyngeal carcinoma. The virus expresses the BHRF1 protein, a homolog of the human Bcl-2 protein, which helps infected cells evade apoptosis, leading to uncontrolled cell proliferation and tumor growth. Current treatments for EBV-related cancers are limited and often involve toxic compounds that can harm healthy cells.

What is the Solution?

Researchers have developed a computationally designed polypeptide that specifically binds to and inhibits the BHRF1 protein of EBV. The novel protein, called BINDI, binds with high specificity and affinity, inducing apoptosis in EBV-infected cells. When delivered using an antibody-targeted carrier, these inhibitors have shown efficacy in suppressing tumor growth and extending survival in preclinical models of EBV-positive lymphoma. This targeted approach offers a promising therapeutic strategy for treating EBV-related cancers by selectively inducing cell death in infected cells, addressing the limitations of current therapies and offering a safer,

Technology ID

BDP 7411

Category

Therapeutics/Infection

Selection of Available Technologies

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more effective alternative.

What is the Competitive Advantage?

High Specificity and Affinity: Designed polypeptides bind BHRF1 with picomolar affinity, ensuring targeted action.

Reduced Toxicity: Selective inhibition of BHRF1 minimizes damage to healthy cells, unlike traditional chemotherapy.

Efficacy in Preclinical Models: Demonstrated tumor suppression and extended survival in xenograft models of EBV-positive lymphoma.

Potential for Broad Application: Can be adapted for other B cell lymphoma family proteins, expanding therapeutic use.

Patent Information:

US20160376333A1

References

1. Procko, E., Berguig, G. Y., Shen, B. W., Song, Y., Frayo, S., Convertine, A. J., Margineantu, D., Booth, G., Correia, B. E., Cheng, Y., Schief, W. R., Hockenbery, D. M., Press, O. W., Stoddard, B. L., Stayton, P. S., Baker, D.(2014) , https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4079535/, https://www.cell.com/, 157, 1644-1656