A Non-Cytotoxic *oriP*/EBNA-1 Vector for Human Gene Therapy

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WARF: P04170US

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a non-cytotoxic EBNA-1 derivative that supports extrachromosomal replication of oriP.

Overview

The Epstein-Barr virus (EBV) is a member of the Herpes family of viruses. The EBV origin of plasmid synthesis, *oriP*, efficiently supports DNA synthesis in higher eukaryotic cells. This origin uses only one viral protein, EBNA-1. All other factors are provided by the cell.

The *oriP*/EBNA-1 vector has been a popular cell culture tool for the expression of DNA sequences of interest. Vectors derived from EBNA-1 also are being considered for use in gene therapy. However, EBNA-1 is cytotoxic when overexpressed in a cell and also may be oncogenic.

The Invention

UW-Madison researchers have developed a vector encoding a derivative of EBNA-1 that is not cytotoxic when expressed efficiently in cells. The derivative lacks several amino acids from the LR1 region. It supports extrachromosomal replication, maintenance and transcription from extrachromosomal *oriP*-containing vectors, but does not substantially activate expression of host cell genes.

Applications

- Gene therapy

Key Benefits

- Useful *in vitro* or *in vivo*
- Will not kill host cells when expressed at high levels
- May be used to deliver genes to tumor cells
- May be used with many cell types in cell culture
- Avoids insertional mutagenesis by maintaining DNA as plasmids

Additional Information

For More Information About the Inventors

- William Sugden

Related Technologies

- WARF reference number P08058US describes a modified oriP vector with an improved oriP element

Publications

- Kennedy G. and Sugden B. 2003. EBNA-1, a Bifunctional Transcriptional Activator.

Tech Fields

- Research Tools : Other research tools

For current licensing status, please contact Rafael Diaz at rdiaz@warf.org or 608-960-9847