EVMS
Eastern Virginia Medical School

Synthetic Polynucleotide-Binding Peptides

Intellectual Property Status

U.S. Patent #9,896,489

Advantages

- Reduced immunogenicity
- Can be adapted for a variety of administration routes
- Prototype testing shows no effect on growth of primary epithelial cells
- Indicated for cancer with amplified c-MYC genes
- Indicated for repeat expansion diseases

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Technology Overview

Researchers at Eastern Virginia Medical School have developed a suite of synthetic peptides that have the ability to act as both oncogenic and genetic modulators. Specifically, these novel peptides focus on inhibiting the growth of cancer cells that have amplified c-MYC genes. This c-MYC gene is responsible for the progression of a variety of cancers such as small cell lung carcinoma, lymphoma, and colon cancer among others.

The developed Purα agonist peptide contains a domain that recognizes Pur binding elements in DNA and also has protein-protein interacting domains. Pur elements in DNA and RNA form non-helical DNA structures called G-quadruplexes to which the peptide strongly binds. Additionally, the synthetic peptides have the ability to access all cells including cancer cells, cells from the bloodstream and brain cells following intracerebroventricular injection. These peptides incorporate similar features of human protein motifs, thereby reducing the immunogenicity.

The developed lead peptide has been tested against normal, primary epithelial cells and has shown no significant effect on the growth of these cells. Additionally, the lead peptide does not cause any acute toxicity following intracerebroventricular injection into mouse brain. The peptides have potential to modulate certain neurological diseases caused by amplified genetic sequences and may also modulate certain viral interactions with Pur-alpha. It is anticipated that these peptides can be administered topically and/or intravenously along with the ability to transfect/transduce into cells with a vector or coupled with monoclonal antibodies or other forms of cellular targeting.

Please contact techtransfer@evms.edu if you are interested in partnering on the commercialization of this technology.