CURF
Clemson University Research Foundation

Peptide for Improved Neural Stem Cell Growth (2012-051)

New Peptide Sequence based on 12 Amino Acids Improves Neural Stem Cell Growth

Market Overview

This peptide introduces a new way to accelerate cell growth of neural stem cells in culture. The global stem cell market is expected to grow from $6.7 billion in 2016 to nearly $12.3 billion in 2021, representing a thriving market. Cultured cells, especially stem cells, struggle to effectively proliferate on their own. Currently, peptide chains such as laminin or collagen type IV are used to enhance cell proliferation, but these materials are expensive and can trigger immune responses if utilized in the human body. Clemson University researchers have engineered a new chain of peptides that performs as effectively as existing chains but a lower cost and while exhibiting no immunogenic response. The new chain is a peptide sequence based on 12 amino acids that can support neural cell, epithelial cell, and endothelial cell growth.

Application

Stem cells; cell cultures

Stage of Development

Proof-of-concept completed

Advantages

- Demonstrates excellent cell growth characteristics for hard to grow neural cells, promoting human neural cell attachment, proliferation, and neuronal differentiation
- Exhibits no immune response, improving the success of stem cell implantation
- Utilizes new peptide sequence based on 12 amino acids, offering a solution that is easy to use

Technical Summary

This peptide sequence is based on 12 amino acids and is more effective in supporting human neural cell attachment, proliferation, and neuronal differentiation than traditional approaches. The short peptide can be used to replace full extracellular matrix (ECM) laminin molecules for the use in human neural stem cell culture. It can be readily incorporated into biocompatible hydrogel to support 3D neural cell growth and vascular cell growth. In addition, this new chain can be delivered at a lower cost, and can also be used in other applications, such as targeted cancer therapy.

App Type	Country	Serial No.	Patent No.	CURF Ref. Number	Inventors
Utility	United States	13/598,343	8,609,409	2012-051	Xiaowei Li, Ning Zhang, Xuejun Wen