

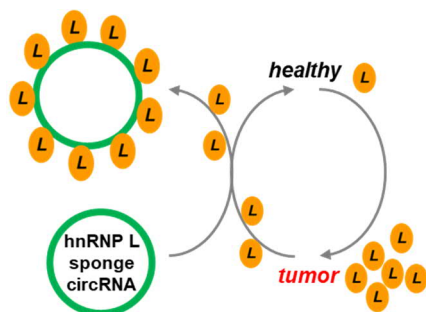
Designer Circular RNA as Protein Sponge for Cancer Therapy

Circular RNA, pancreatic cancer therapy, hnRNP L, heterogeneous nuclear ribonucleoprotein L, protein sponging, RNA-binding proteins, molecular medicine, oral squamous cell carcinoma therapy

DESCRIPTION OF TECHNOLOGY

Feature: A new artificial circular RNA with an unusual ribonucleotide sequence was designed to bind and inhibit intracellular heterogeneous nuclear ribonucleoprotein L (hnRNP L). HnRNP L plays an essential role in the development of pancreatic and other cancer types.

Advantage: The new circular RNA is very stable, it can easily be transfected into cells. It is used to sponge and thereby inhibit selectively hnRNP L.



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Benefit: The new circular RNA enables specific binding and inhibition of heterogeneous nuclear ribonucleoprotein L in cells and thus opens new therapeutic approaches for the treatment of pancreatic and other cancer types, where hnRNP L is deregulated. The efficiency of hnRNP L inactivation is comparable to standard RNA approaches.

APPLICATION FIELDS

The new circular RNA is useful in pancreatic and oral squamous cell cancer therapy, when hnRNP L is overexpressed, based on binding and inhibiting intracellular heterogeneous nuclear ribonucleoprotein L (hnRNP L).

AT A GLANCE ...

Application Fields

- Inhibiting RNA-binding proteins
- Cancer therapy
- Pancreatic cancer and others

Business

- Physicians, oncologists
- Medical laboratories

USP

- Metabolically stable protein-sponge-forming circular RNA
- Designer circRNA for treatment of pancreatic and other cancer types

Development Status

- Circular RNAs with specific protein-sponge functions were produced
- HeLa cells were transfected with the new circular RNA
- Cell lines were generated that stably express the new circular RNA

Patent Status

The priority application was filed with the European Patent Office on November 08th, 2019. An international patent application (PCT) is possible.

ADVANTAGES OVER THE PRIOR ART

Circular RNA is much more stable than the corresponding linear RNA.

Circular RNA can be designed to sponge RNA-binding proteins, thereby inhibiting the metabolic function of such proteins.

Circular RNA can easily be introduced into cells and has no adverse side effects.

A circular RNA was designed to bind hnRNP L with high specificity and affinity, inactivating this protein and thus opening up new therapy options for pancreatic and other cancer types, where hnRNP L is deregulated.

STATE OF THE PRODUCT DEVELOPMENT

The new circular RNA can be produced by *in vitro* transcription and circulization. It can also be expressed in cell lines, for example HeLa cells.

MARKET POTENTIAL

Pancreatic cancer is one of the leading causes of death from any cancer and occurs most often in the developed world. Pancreatic adenocarcinoma has a very poor prognosis, and therefore there is a great need in improved therapeutic options. Pancreatic cancers resulted in over 430,000 deaths globally in 2018.

COOPERATION OPPORTUNITIES

On behalf of its shareholder Justus-Liebig-Universität Giessen TransMIT GmbH is looking for cooperation partners or licensees for further development in Germany, Europe, US, and Asia.

A TECHNOLOGY OF



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