

## Reduction of cancer cells invasion using microRNAs (P-1372)

### Keywords

- microRNA therapy for proliferative diseases
- targeting cancer associated fibroblasts with microRNAs
- cancer cells invasion inhibition

### Abstract

The pivotal role of the tumor stroma and in particular of cancer associated fibroblasts (CAFs) in maintaining tumor aggressiveness has become increasingly evident. microRNAs aberrantly expressed in CAFs are involved in tumor initiation, development, progression and invasion in various human tumor entities. The present invention describes therapeutic microRNAs, whose mimics can be used to block the tumorigenic potential of CAFs thereby reducing tumor cell invasion and metastases formation.

### The Technology and Development Stage

Colorectal cancer is a leading cause of cancer-related death worldwide. The stromal subgroup of colorectal cancer has the worst clinical outcome. Several microRNAs are involved in remodeling the tumor in the stromal group. This invention targets these specific microRNAs in CAFs which regulate the tumor development.

The tumor microenvironment is a complex network that besides the tumor cells it comprises immune cells, stromal cells, the extracellular matrix and a multitude of growth factors and cytokines. CAFs are getting in the focus as important players in the tumor microenvironment.

Several microRNAs have been identified to regulate the specific tumor expression pattern observed in the stromal cancer subgroup. These stromal cells can be adapted by the tumor to form a tumor microenvironment supporting tumor growth and invasion. Expressing these miRNAs singly or in combination in CAFs considerably reduced colon cancer cell invasion in Boyden-chamber assays. The identified microRNAs also showed to regulate central genes for the remodeling of the extracellular matrix and suppressed the migration of colon cancer cells, which can make a lead to metastasis inhibiting prophylactic or treatment therapy.

### Applications and Commercial Opportunity

This invention provides a novel therapeutic strategy to prevent and treat proliferative diseases, such as colorectal cancer. The invention is based on the idea of targeting CAFs with microRNAs which regulate expression of extracellular matrix proteins involved in tumorigenesis as strategy for the treatment of cancer diseases. Targeting CAFs instead of direct tumor cell targeting should circumvent the occurrence of tumor escape events.

We are looking for collaborators to help us obtain pre-clinical data and take this to the clinical trials, as well as licensees.

### Inventors

The investigators are: Stefan Eichmüller, Rainer König, Volker Ast, Marcus Oswald, Alexander Berndt, Theresa Kordaß, Wolfram Osen and David Eisel.

### Intellectual Property

Priority application EP 18186622.9 was submitted on 31.07.2018.

### Further Information

No other public information is currently available, but further information (speaking with the inventor) is available under a signed Confidential Disclosure Agreement (CDA).

### DKFZ Contact:

For further information, including a CDA, please contact:

Lana Semykina  
Deutsches Krebsforschungszentrum  
Technology Transfer Office T010  
Email: s.semykina@dkfz.de  
Tel.: +49-(0)6221-42-2953  
Fax: +49-(0)6221-42-2956