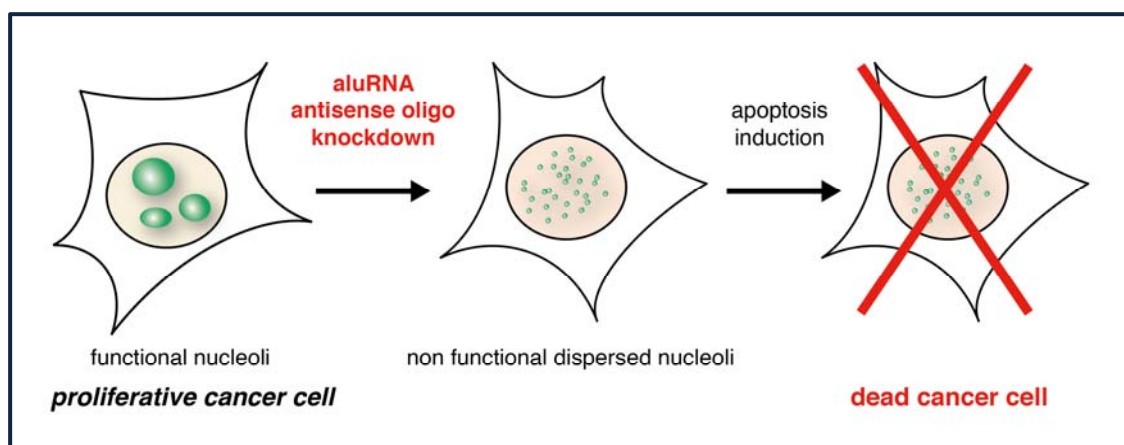


## Therapeutic Targeting of Nucleoli Organisation (P-1090)

### Keywords

- targeting nucleolus structure of highly proliferating cells via knockdown of specific non-coding RNAs
- antisense oligo specifically target cancer cells and induce apoptosis



### Abstract

The nucleolus is the most prominent nuclear compartment and comprises specific nucleic acids and proteins. It is the place of ribosomal RNA (rRNA) synthesis by RNA polymerase I for the assembly of the ribosomes. It functions also as sensor and integrator of cellular stress signals. The assembly and maintenance of functional nucleoli is thus essential for cell viability, while disruption of their integrity activates apoptosis and inhibits cancer cell proliferation. Therefore, inhibition of ribosome biogenesis is a promising approach for cancer therapy.

### Development Stage

Specific anti-sense oligos (ASOs) are validated *in vivo* in various cancer cell types including prostate cancer cells, breast cancer cells, pediatric glioblastoma cells and pancreatic cancer cells. The treatment of cell lines with ASOs targeting Alu element-containing RNAs (aluRNAs) resulted in apoptosis

of cancer cells 14 hours after transfection, whereas non-cancerous control cells remain unaffected.

### The Technology

The invention consists of specific antisense oligos that target aluRNAs and specifically drive apoptosis in cancer cells.

### Applications and Commercial Opportunity

Despite the fact that anti-cancer drugs targeting ribosome biogenesis are available, compounds directly targeting the structural integrity of nucleoli are still lacking. The nucleolus is a recognized target for cancer therapy and more specifically, ribosome biogenesis is a target for a large number of chemotherapeutic drugs. Here, our invention utilizes a novel mode of action by targeting the nucleolar structure and thereby ribosome biosynthesis. It is known that improper function of the nucleolus results in stabilization/accumulation of the tumour

suppressor factor p53 and may lead to cell cycle arrest and apoptosis.

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#### **Intellectual Property**

European patent application EP13168524 was filed May 21<sup>st</sup>, 2013.

#### **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).

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