

**Technology**

Antisense oligonucleotide for inhibition of aberrant vascular smooth muscle cell growth and cancer cell growth

Inventor

Robert Weiss, M.D.
VA Northern California Healthcare System

Key Features

- Multiple applications including atherosclerosis therapy, cancer therapy, and angioplasty re-stenosis
- High specificity and low toxicity
- Easily administered to cells

Stage of Development

Reduced to practice with successful in vitro demonstration

Keywords

- Therapeutic
- Atherosclerosis therapy
 - Cancer therapy
 - Cyclin kinase
 - p21
 - Antisense oligonucleotides
 - Vascular smooth muscle cells

Patent Status

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Contact

Lee Sylvers, Ph.D.
Technology Transfer Program
Department of Veterans Affairs
Office of Research & Development (12TT)
810 Vermont Avenue, NW
Washington, DC 20420
Phone: 202-461-1714
Fax: 202-254-0460
E-mail: lee.sylvers@va.gov

Novel Specific Inhibitor of the Cyclin Kinase Inhibitor p21 and Methods of Using the Inhibitor (VA Reference No. 01-053)

Novel method of using antisense oligodeoxynucleotides to inhibit aberrant vascular smooth muscle cell growth in atherosclerosis and unregulated growth of cancer cells

Technology

The Department of Veterans Affairs has developed a method of inhibiting the aberrant vascular smooth muscle cell growth in atherosclerosis and unregulated growth of cancer cells.

Description

The VA technology is based on the discovery of a novel action of an inhibitor of the cyclin-dependent kinases (CDKS). In vitro research models have demonstrated that vascular smooth muscle cell proliferation induced by platelet-derived growth factor requires the presence of the CDKS inhibitor (p21Waf 1/Cip 1) as an assembly factor. In addition in *in vitro* research models, the VA has demonstrated that by interfering with the action of the CDKS inhibitor and using antisense oligonucleotides, vascular smooth cell proliferation is reduced. It is possible that antisense inhibition of p21 Waf 1/Cip 1 may be a useful therapy against diseases where cell proliferation, especially smooth muscle cell proliferation, is a feature.

Competitive Advantage

Current methods of treatment for cancer and atherosclerosis are associated with high toxicity and low specificity. The inhibitory oligonucleotides may prove useful for treatment of cancer, since this disease involves aberrant proliferation of a variety of cells and is associated with the creation of new blood vessels. They may also be useful as a future therapy of atherosclerosis and angioplasty re-stenosis.

This invention:

- Utilizes an antisense oligodeoxynucleotide that is easily transfected into cells (which can occur even in the absence of liposome reagents).
- Has specificity to a specific gene.
- Is expected to have a high safety profile.

Status

The Department of Veterans Affairs is looking for a partner for further development and commercialization of this technology through a license, and the VA inventors are available to collaborate with interested companies through a Cooperative Research and Development Agreement (CRADA).