



## **Oligonucleotide Compositions for the inhibition of Transcription Factors** (*Beverly E. Barton, NJMS 03-02*) Therapeutic

### **Background**

The STAT (signal transducers and activators of transcription) family of transcription factors is involved in the signal transduction pathway of growth factors and cytokines. STATs are known to be activated by phosphorylation of tyrosine and serine residues. Phosphorylation of STAT3 is via IL-6 signaling and is tightly regulated in normal cells. However, aberrant signaling of STAT3 is found in many types of malignancies. The persistent activation of STAT3 leads to over-expression of genes involved in anti-apoptotic factors and cellular proliferation. Inhibition of STAT3 has been found to lead to apoptosis of malignant cells. **The present invention provides oligonucleotide compositions for the inhibition of STAT family of transcription factors and, thus, for treatment of diseases wherein aberrant STAT expression plays a critical role in pathophysiology.**

### **Description of the Technology**

Oligonucleotide compounds containing sequences capable of binding to transcription factors and inhibiting activity of transcription factors have been shown to modulate cellular responses mediated by STAT family of transcription factors. In the presence of excess amounts of the binding sequences, STAT transcription factors were prevented from binding to genes. These oligonucleotide binding sequences were tested for their ability to inhibit tumor growth in an *in vivo* mouse model for human prostate cancer. Mice injected with these oligonucleotides had significantly smaller tumors compared to control mice. Taken together, these data support the use of these oligonucleotides in the treatment of diseases wherein STAT transcription have a pathophysiological role.

### **Applications**

- For the treatment of diseases wherein STAT family of transcription factors have a pathophysiological role. Specific applications include:
- Cancer
- Autoimmune diseases
- Chronic inflammatory diseases
- Alopecia, cosmetic hair removal or suppression

### **Patent Status**

United State provisional patent application filed

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