VCU TECH TRANSFER

Virginia Commonwealth University

"Oligomers for the Treatment of Emphyesema and other Lung Diseases"
VCU # 08-43

Applications:

- Potent anti-inflammation
- Specific and potent inhibition of elastase
- Treatment of lung inflammatory diseases

Advantages:

- Unique, dual-action drug, inhibiting inflammation and elastase
- Negligible toxicity, based on *in vitro* studies
- Minimal systemic effects expected
- Reduced degradation compared to peptides and proteins
- Size is conducive to inhalation
- High potency, based on *in vitro* studies
- Readily synthesized

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Market Need:
Over 35 million Americans are living with acute or chronic lung inflammatory diseases such as acute lung injury, emphysema, chronic obstructive pulmonary disease (COPD), or chronic bronchitis. A major cause of these diseases is uncontrolled inflammation in the lungs, which can be attributed to increased airway infiltration of neutrophils and their subsequent secretion of elastase. Therapies that target the neutrophils in the lungs, inhibit elastase or target the molecular mechanisms responsible for this influx of neutrophils represent potential targets for the treatment of these lung diseases. A number of methods have been developed, but have been unsuccessful thus far.

Technology Summary:
Researchers at VCU have designed macromolecular oligomers that potently inhibit both lung inflammation and elastase activity. These oligomers could be used in inhalation therapy for lung diseases where inflammation is the underlying cause. The advantage of inhalation therapy is that the drug is delivered directly to the sites of inflammation. Furthermore, their large size prevents the oligomers from being absorbed rapidly into the blood stream. Although these oligomers have primarily been tested in emphysema and COPD, it is logical to expect that they could be used in the treatment of other diseases involving inflammation and neutrophil elastase.

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Technology Status:
U.S. provisional patent application has been filed and foreign rights are available.