CCR5 Antibodies and Antagonists to Treat COPD and Inflammation

**OCR Number:** OCR 1617

**Description:**
Scientists at Yale have successfully demonstrated therapeutic efficacy of a monoclonal antibody targeting CCR5 in an animal model for Chronic Obstructive Pulmonary Disease (COPD). COPD, with emphysema as its most severe manifestation, ranks as the fourth leading cause of death in the United States and the second leading cause of disability. This is a significant healthcare problem with an estimated $25.5 Billion global market. COPD is characterized as an inflammatory disease attributed to an inappropriate stimulation of the immune system. This invention reduces the stimulation of Th1 and Th2 helper cells that results in the disease condition by selectively targeting the CCR5 receptor and preventing IFN-α or IL-13 induced inflammation and airway remodeling. The invention claims the use of anti-CCR5 antibodies and antagonists for treating Th1 and Th2 mediated diseases.

**Field of Application:** Inflammatory diseases including but not limited to asthma, COPD, interstitial lung disease, chronic obstructive lung disease, chronic bronchitis, eosinophilic bronchitis, eosinophilic pneumonia, pneumonia, inflammatory bowel disease, atopic dermatitis, atopy, allergy, allergic rhinitis, idiopathic pulmonary fibrosis, scleroderma, and emphysema.

**Advantages:** While many companies have focused on CCR5 antagonists for HIV treatments, CCR5 antagonists may also address a wide range of inflammatory diseases that affect a significant number of patients. Such additional indications present a large market opportunity for companies developing CCR5 antagonists, as current anti-inflammatory therapies are largely insufficient. Pulmonary focus and delivery may be more efficacious and have fewer toxicity issues than current systemic administration of CCR5 inhibitors targeting systemic HIV infections. This technology’s value is two-fold: it provides a unique means to treat COPD and related afflictions, while also having transferable value for other anti-CCR5 applications such as HIV inhibition.

**Stage of Development:** Demonstration of efficacy of anti-CCR5 antibodies in animal models of COPD.

**IP Status:** Yale has filed a patent application covering the use of CCR5 antagonists to treat COPD and other inflammatory disorders.

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