



OFFICE OF TECHNOLOGY TRANSFER



McGill

T E C H N O L O G Y O P P O R T U N I T Y

## Cell Permeable Peptide for Treatment of Allergic Airway Diseases

McGill University is seeking a company interested in developing and commercializing a long acting STAT-6 directed peptide able to inhibit allergen-induced airway inflammation and airway hyper responsiveness, two of the main clinical characteristics of asthma in humans. Respiratory diseases constitute one of the most attractive pharmaceutical sectors, with sales expected to grow from \$30 billion in 2004 to an estimated \$65 billion in 2014. Asthma accounts for 40%, or \$12 billion sales in 2004. In addition, 8% of the worldwide population (more than 60 million people) has asthma. By targeting the root cause of asthma, rather than the symptoms, the compounds of the invention present significant competitive advantage.

### Applications

Novel therapy for allergic airway disease including asthma and allergic rhinitis.

### Advantages

- STAT-6 peptide targets the cause of asthma rather than only addressing the symptoms thereby having disease modifying properties.
- STAT-6 peptide targets specifically the immune response in the airways thus providing effective symptom control.
- STAT-6 peptide interrupts or completely abrogates the allergic cascade resulting in inhibition of inflammation and airway remodeling and reduction of side effects.

## Technology

Drs Fixman and McCusker have developed a STAT-6 directed cell permeable peptide with the ability to inhibit allergic rhinitis and asthma. The peptide comprises a protein transduction domain coupled to a moiety that inhibits STAT-6 transcription factor. Research data provides evidence demonstrating that the chimeric peptide inhibits the production of cytokines responsible for the pathogenesis of allergic airway disease and inhibits allergen-induced airway inflammation and airway hyper responsiveness. It also clearly establishes that intranasal delivery of the peptide in clinically relevant murine models *in vivo* provides therapeutic benefit that last for at least two weeks. In addition, their research confirms the absence of toxicity in cultured cells.

## The Inventors



**Dr. Elizabeth Fixman** is Assistant Professor in the Department of Medicine and Meakins-Christie Laboratories of McGill University. She received her PhD in Pharmacology from Johns Hopkins University. Dr Fixman's research focuses on recombinant retroviruses to generate gene-modified T cells with the capacity to deliver specific cytokines or molecules with therapeutic potential to the airways. She is investigating airway inflammation and smooth muscle remodeling in addition to using cell permeable peptides to inhibit signaling molecules whose aberrant activation contributes to allergic airway disease.



**Dr. Christine McCusker** is Assistant Professor of Pediatrics and Research Director of the Meakins-Christie Laboratories of McGill University. She obtained her MD from McMaster University. Dr McCusker's research focuses on investigating the mechanisms by which the mucosal immune system regulates the responses to particular antigens. Using murine models of allergic asthma and rhinitis she showed upper airways antigen challenge results in inflammatory changes in both the upper and lower airways and that the airway hyper responsiveness and inflammation achieved with this model are TH2-IL13-dependent.

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