



OFFICE OF SPONSORED RESEARCH



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

# First in Class 5-Oxo-ETE Receptor Antagonists

## Overview

McGill University is seeking a company interested in developing and commercializing 5-Oxo-ETE receptor antagonists for the treatment of asthma, allergic rhinitis with an eosinophilic component. Asthma and allergies represent a significant burden on the healthcare system; 8% of the worldwide population in industrialized countries (more than 60 million people) is afflicted with asthma whereas 150 million people suffer from allergic rhinitis. The asthma and allergic rhinitis market was valued at \$25 billion and is continuing to grow in spite of the fact that available treatments provide symptomatic relief at best. An effective, safe and potent antagonist of the OXE receptor would represent a novel therapeutic approach in asthma and allergic rhinitis.

## Applications

Monotherapy or adjunct therapy for asthma, allergic rhinitis and other inflammatory diseases.

## Advantages

- First in class OXE receptor antagonists directed against a new therapeutic target in asthma and allergic rhinitis.
- Compounds could be used alone or in combination with leukotrienes or corticosteroids to provide treatment options for patients unresponsive to current therapies.
- 5-Oxo-ETE is one of the most potent chemoattractant for eosinophils, antagonist drugs could be developed for treatment of eosinophilic diseases other than asthma and allergic rhinitis, thereby broadening the market potential.

## Technology

Eicosanoids are important mediators of the inflammatory response. The two major pathways for the metabolism of arachidonic acid are initiated by the actions of cyclooxygenase 1 & 2 and 5-lipoxygenase (5-LO). Products of the 5-LO pathway, including leukotrienes and 5-oxo-EETE, are particularly important in inflammation and asthma. 5-oxo-EETE is a potent chemoattractant for eosinophils, basophils and neutrophils, its actions being mediated by the OXE receptor. Drs Powell and Rokach have synthesized first-in-class antagonists of the OXE receptor. The compounds have been tested in the following assays: Ca mobilization in human neutrophils, 5-oxo-EETE induced neutrophil chemotaxis and 5-oxo-EETE induced actin polymerization. Two compounds, # 60 and #103, exhibit potent antagonist activity and are devoid of any agonist effects. In the calcium mobilization assay #60 has an  $IC_{50}$  of about 30 nM whereas #103 is about 34 nM. Both of these lead compounds are racemic mixtures and their pure active enantiomers exhibit enhanced potency.

## The Inventors



**Dr. William Powell** is Professor in the Department of Medicine and Associate Director of the Meakins-Christie Laboratories of McGill University. He received his PhD in Chemistry from Dalhousie University. Dr Powell's research is focused on the role of eicosanoids in asthma and other inflammatory diseases. He discovered a pathway for the metabolism of arachidonic acid resulting in the formation of 5-oxo-EETE and is investigating the regulation of its biosynthesis and its physiological role in asthma and inflammatory diseases.



**Dr. Joshua Rokach** is Professor of Chemistry and Director of the Claude Pepper Institute for Aging and Therapeutic Research at the Florida Institute of Technology. He obtained his PhD in Chemistry from the Weizmann Institute of Science. He has received worldwide recognition for the first syntheses of major inflammatory mediators such as leukotrienes and lipoxins. While working at Merck, Dr. Rokach led the team that developed Singulair, a leading drug in the treatment of asthma. He is currently working on the total syntheses of biologically important molecules and the preparation of synthetic probes designed to identify and isolate novel enzymes and receptors.

### CONTACT:

Michèle Beaulieu, Ph.D., MBA  
Office of Sponsored Research  
McGill University  
Tel: 514-398-6874  
Email: [Michèle.beaulieu@mcgill.ca](mailto:Michèle.beaulieu@mcgill.ca)  
Reference code: ROI 09044  
Opportunity: Exclusive license or research collaboration



L'Institut de recherche  
du Centre universitaire de santé McGill  
The Research Institute  
of the McGill University Health Centre



**McGill**