Applications
Therapeutic applications relate to allergy and inflammatory diseases and include:
- Asthma;
- Allergic rhinitis

Technology Description
Researchers at the University of Queensland are developing selective, small molecule inhibitors of haematopoietic prostaglandin D2 synthase for the treatment of asthma and allergic rhinitis. Prostaglandin D2 is a well recognized pro-inflammatory modulator of asthma and allergic disease, making its bioactivity and synthesis well validated targets for therapeutic intervention.

New therapeutic candidates currently in Phase II clinical trials target prostaglandin D2 receptors as antagonists and represent a systemic approach to modulating prostaglandin D2 activity. Pre-receptor regulation by prostaglandin D2 synthesis blockade represents an alternative, novel mode of disease control. Consequently, the enzyme responsible for overproduction of prostaglandin D2 in airway epithelial cells and innate leukocytes (mast cells, basophils, eosinophils) associated with allergic conditions, hematopoietic prostaglandin D2 synthase, is also a well validated drug target for treatment of asthma and allergic rhinitis. This restricted tissue distribution compared to the prostaglandin D2 receptors provides a strong safety rationale for targeting prostaglandin D2 synthase. The team have developed potent and specific inhibitors of prostaglandin D2 synthase that are orally bioavailable and efficacious in rodent models.

Problems with Current Therapies
Asthma is one of the most common chronic respiratory diseases in developed countries. In the United States, the economic burden of severe uncontrolled asthma (~1 million patient subset of total asthmatics) was $21 billion in 2013.1 Most patients with asthma effectively control the disease with the combined use of corticosteroids and long acting beta agonists, anti-cholinergics and leukotriene receptor antagonists. However, approximately 10% of patients fail to respond to conventional therapies due to severe and/or steroid refractory disease, these patients account for more than 50% of the total healthcare costs of asthma. The long term use of high steroid doses, >800μg Budesonide, has side effects that include retarded growth of children and weaken bone in adults.
Asthma management is further complicated by co-morbidities including hay fever/allergic rhinitis.

Asthma is an inflammatory disorder and new anti-inflammatory drugs are desperately needed to provide more efficacious treatment for these patient groups. Adjunct therapies using novel modes of action may allow reduction in corticosteroid dose making them safer and more effective in refractory disease. Asthma shares an underlying Th2 type inflammatory response with allergic reactions, and with the treatment of responses such as allergic rhinitis by either anti-histamines or steroids not completely effective, new medications targeting other sites in the allergic response are necessary.

Intellectual Property
National phase applications have been filed in USA, Europe and Australia to protect uses of the prostaglandin D2 synthase inhibitor molecules.

Commercialisation Opportunities
UniQuest is seeking funding or licensee partners to further develop this technology.

Publication