

## Novel Therapeutic Target and Diagnostic Marker for Asthma and Related Conditions (CD48) (Yisum)

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### Anti-CD48 agent blocks CD48 stimulatory pathway and inhibits the activity and expression of CD48

<b>Categories</b>	Drugs, Allergic airway inflammations, Asthma
<b>Development Stage</b>	Laboratory and animal trials were performed
<b>Patent Status</b>	Patent pending
<b>Market Size</b>	The invention is targeted at the multi-billion fast growing market of drugs for treating asthma and as a diagnostic kit for detection of asthma

### Highlights

- CD48 is a surface-marker molecule present in white blood cells.
- CD48 was found to be a key molecule in allergic conditions, particularly in allergic airway inflammations like allergic asthma and nasal polyposis.
- Anti-CD48 agents that block CD48 the stimulatory pathway and inhibit the activity and/or expression of CD48, are excellent candidates for treatment of allergic conditions.
- CD48 may be secreted by the cell upon cell activation. It is found in the sera of asthmatic patients and can serve as an easy biomarker for disease detection
- Currently, there is no specific marker for the detection of asthma. The development of a kit using the soluble form of CD48 as the specific marker may provide fast and easy diagnosis tool and an objective evaluation marker of drug treatment effectiveness.

### The Innovation

- The finding that CD48 is a key molecule in allergic airways conditions makes CD48 a possible target molecule in the treatment and diagnosis of allergic airway inflammation such as asthma.
- The proposed therapy for asthma involves administration of therapeutically effective amounts of an anti-CD48 agent, which blocks CD48 stimulatory pathway and inhibits the activity and/or expression of CD48.
- Diagnosis using CD48 is based on the determination of CD48 level of expression in serum/plasma and also on white blood cells.

### Key Features

The revealing of the role of CD48 in allergic conditions paved the way to using anti-CD48 agents to treat allergic conditions and to using determination of CD48-level as an important and easy to perform diagnostic tool.

### Development Milestones

Following the identification of CD48 as an allergen-induced gene in allergic eosinophilic airway inflammation, successful trials in relevant murine models showed that neutralization of CD48 attenuates lung inflammation, goblet cell hyperplasia, mucus production and smooth muscle thickening in the lung – all demonstrating the therapeutic and the diagnostic potentials. Studies with human samples from asthmatic patients have shown significant increase of CD48 in serum<sup>[1]</sup>, eosinophils neutrophils and monocytes .

## The Opportunity

Public attention in the developed world has recently focused on asthma because of its rapidly increasing prevalence, affecting up to one in four urban children. For example in the USA 60 million people (1 in 5) suffer from all types of allergies. In addition, in India too the incidence of allergies was found to be very high, (1 in 4). Asthma is the most severe among the chronic allergic diseases since it can eventually lead to death. Financially, the European asthma therapeutics market, worth \$4.9 billions in 2005, is forecast to reach \$9.3 billions in 2013.

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