Expression and function or Resistin-like molecule alpha in asthma pathogenesis and fibrosis

Results in Brief

The molecular determinants of asthma

Industrialised countries are experiencing a rise in asthma. Understanding the molecular events that culminate in disease pathophysiology is central for designing novel treatments.

HEALTH

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Asthma is a respiratory inflammatory disease that is associated with overproduction of mucus and obstruction of the airway tubes. Considerable research efforts have identified some of the immune cells and the cytokines that are implicated in disease pathogenesis. However, new molecules are continuously emerging as asthma mediators.

In this context, scientists on the EU-funded 'Expression and function or resistin-like molecule alpha in asthma pathogenesis and fibrosis' (RELM-A IN THE LUNG) project set out to delineate the role of Relm-alpha in asthma. Relm-alpha is a resistin-like molecule and belongs to a family of proteins that are potent regulators of the immune system. Relms are known for their capacity to drive immune responses down the Th2 immune pathway.

Given that Relm-alpha was originally identified in experimental allergy, RELM-A IN THE LUNG partners decided to explore its role in asthma. Using animal models of the disease, they found that Relm-alpha is normally expressed in airway epithelia and gets upregulated in the asthmatic lung. Expression is negatively regulated by the paired immunoglobulin-like receptor B (PIR-B) found on lung macrophages. The importance of PIR-B was demonstrated in knockout mice, which showed enhanced Relm-alpha levels and lung histopathology. In turn, Relm-alpha regulates cytokine and chemokine production.

A considerable part of project work focused on delineating how PIR-B modulates immune cell development and function. Scientists observed that eosinophils use PIR-B as a molecular recognition checkpoint in order to expand.

Collectively, the data of the RELM-A IN THE LUNG study shed light onto the molecular mechanisms of asthma. Many of the identified molecules could serve as potential targets for ameliorating asthma symptoms.

Keywords

Asthma, Relm-alpha, PIR-B, eosinophils

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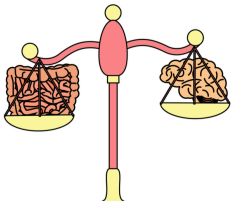

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Project Information

RELM-A IN THE LUNG

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