**New advance in asthma research**

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A major breakthrough in creating effective new treatments for allergic asthma has been discovered by Asthma UK funded scientists at King’s College London.  
  
The discovery is the culmination of over fifteen years of Asthma UK-funded research, and the findings are published in the latest edition of the journal *Nature Structural & Molecular Biology*.  
  
The work, conducted by a team of scientists led by Professor Brian Sutton at the MRC Asthma UK Centre in Allergic Mechanisms of Asthma at King’s, revealed the precise shape of an important molecule called IgE as it binds to receptor proteins on the surface of mast cells in the lungs.  
  
Scientists built up a picture of IgE’s shape down to the location of each individual atom by firing X-rays at purified protein crystals and measuring how the rays were deflected. Using this technique they were also able to reveal how IgE moves and twists as it attaches to the receptor.  
  
With further funding from Asthma UK, the team is now testing a library of small chemical compounds, looking for ones that have the potential to block the interaction between IgE and its receptor and prevent the development of asthma.  
  
There are hundreds of thousands of mast cells crawling through the lining of our lungs, each of which holds thousands of histamine-containing granules. In a person with allergic asthma, IgE molecules sit on the surface of these cells. Then, when the individual comes into contact with an allergen such as grass pollen, it sticks to the IgE, provoking the mast cells to release their granules. Histamine causes breathlessness, wheezing and other asthma symptoms by narrowing the airways and triggering inflammation.  
   
Although allergens from grass pollen, pets, house-dust mites and other sources all have different shapes, all of them trigger asthma and allergy symptoms by binding to IgE on mast cells. Hence, a drug that can prevent IgE from interacting with mast cells would help anyone with allergic asthma, no matter what triggers their allergy.  
  
The breakthrough is an essential step towards chemically-based drugs, such as those now being developed by Professor Sutton, which can be given in tablet form.  
  
Professor Brian Sutton from King’s said: ‘We are immensely proud of our achievement. Thousands of hours of work by my team, plus that of our collaborators, has brought us to an incredibly exciting point.  
  
‘Armed with the precise structure of IgE bound to its receptor we stand a great chance of being able to create hugely effective new treatments for allergic asthma.’  
  
Dr Elaine Vickers, Research Relations Manager at Asthma UK, says: ‘In the UK, 5.4 million people have asthma and almost 80% of them say they have allergies which affect their asthma control.  
  
‘The impact of potential new treatments for allergic asthma resulting from this work could have an enormous impact on the quality of life of people across both the UK and the world.’