

Allergy studies

Advances in the understanding of the pathophysiology of the immune response have led to the discovery of many new molecules that need testing in patients with allergic disease. We have tested over 50 such molecules, in patients with either asthma or rhinitis. We have a large database of such patients and substantial experience of research procedures, such as:

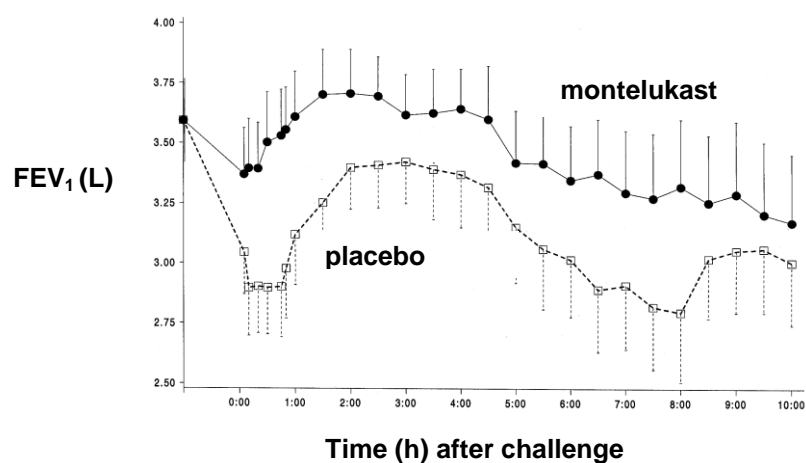


- wheal and flare response;
- nasal challenge and washings;
- nasal and respiratory peak flow rate;
- acoustic rhinometry;
- exhaled nitric oxide;
- several types of spirometry;
- bronchio-alveolar lavage and bronchial biopsy;
- sputum induction by hypertonic saline inhalation;
- bronchial challenge with allergen, AMP, histamine or methacholine;
- sputum and nasal washings, processed for cells, proteins and cytokines;
- lung function tests, such as transfer factor by CO single-breath method, total lung capacity by helium dilution and flow loops, body plethysmography, oscillometry; and
- flow cytometry of whole blood for specific cell populations.

We have tested a wide range of new molecules, including:

- IL-5 monoclonal antibody;
- recombinant IL-12;
- antisense: adenosine A₁ receptors;
- integrin VLA-4 ($\alpha_4 \beta_1$) antagonists;
- leukotriene antagonist;
- PDE₄ antagonists;
- 'soft' steroids;
- mast cell stabiliser;
- IL-4 antagonist;
- mast-cell tryptase / trypsin antagonist; and
- 5-lipoxygenase-activating protein inhibitor (FLAP inhibitor)
- kinase inhibitors

Montelukast inhibits the early and late responses to allergen inhalation in mild to moderate asthma (mean & SD; n=13)



We can provide a full service – from design through to report writing – for a ‘proof-of-principle’ study of most types of new molecule in patients with asthma or rhinitis. Our track record shows that we can complete these demanding and complex studies to a high standard and on time. We have close links with other units with whom we collaborate on large studies, and with the National Heart and Lung Institute (NHLI), Royal Brompton Hospital, London.



Whole-body plethysmography for complete pulmonary respiratory mechanics

Some of our publications

1. Bryan S, O'Connor B, Matti S, Leckie M, Kananbar V, Khan J, Warrington S, Renzetti L, Rames A, Bock J, Boyce M, Hansel T, Holgate S, Barnes P. Effects of recombinant human interleukin-12 on eosinophils, airway hyper-responsiveness, and the late asthmatic response. *Lancet* 2000; 356: 2149–2153.
2. Carey W, Warrington S, Boyce M, Luria X. Inhibition of the histamine wheal by ebastine compared with cetirizine, fexofenadine and loratidine at steady state. *Drugs Exp Clin Res* 2002; 28: 243–247.
3. Erin E, Leaker B, Zacharasiewicz A, Higgins L, Jose P, Williams T, Boyce M, de Boer P, Durham S, Barnes P, Hansel T. Single-dose topical corticosteroid inhibits IL-5 and IL-13 levels in nasal lavage following grass pollen challenge. *Allergy* 2005; 60: 1524–1529.
4. Norris V, Choong L, Tran D, Corden Z, Boyce M, Arshad H, Holgate S, O'Connor B, Millet S, Miller B, Rohatagi S, Kirkesselli S. Effect of IVL745, a VLA-4 antagonist, on allergen-induced bronchoconstriction in patients with asthma. *J Allergy Clin Immunol* 2005; 116: 761–767.
5. Kent S, Boyce M, Diamant Z, Singh D, O'Connor B, Saquq P, Norris V. The 5-lipoxygenase activating protein inhibitor, GSK2190915, attenuates the early and late responses to inhaled allergen in mild asthma. *Clin Exp Allergy* 2013; 43: 177–186.
6. Singh D, Boyce M, Norris V, Kent S, Bentley J. Inhibition of the early asthmatic response to inhaled allergen by the 5-lipoxygenase activating protein inhibitor GSK2190915: a dose-response study. *Int J Gen Med* 2013; 6: 897–903.
7. Cahn A, Boyce M, Mistry S, Musani N, Rambaran C, Storey J, Ventresca P, Michel O. Randomised trial of allergen-induced asthmatic response in smokers and non-smokers: effects of inhaled corticosteroids. *Clin Exp Allergy* 2015; 45: 1531–1541.
8. Singh D, Leaker B, Boyce M, Nandeuil MA, Collarini S, Mariotti F, Santoro D, Barnes PJ. A novel inhaled phosphodiesterase 4 inhibitor (CHF6001) reduces the allergen challenge response in asthmatic patients. *Pulm Pharmacol Ther* 2016; 40: 1–6.

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