

patients with asthma

Christopher H Woelk⁵, Timothy SC Hinks¹

1 Oxford Respiratory NIHR Biomedical Research Centre, Nuffield Department of Clinical Medicine, University of Oxford, Oxford (UK)

2 Faculté de Médecine et des Sciences de la Santé de l'Université de Sherbrooke, Sherbrooke (Canada)

3 Repare Therapeutics, Cambridge MA, (USA)

4 Janssen Research and Development, High Wycombe, Buckinghamshire (UK)

5 Merck Exploratory Science Center, Merck & Co., Inc., Cambridge MA, (USA)

akulsinghania@gmail.com

dhorowit@its.jnj.com

R.Djukanovic@soton.ac.uk

christopher.woelk@merck.com

Background: Eotaxin-3 is an eosinophilic chemokine. We investigated how its expression in the bronchial epithelium correlates with other IL-13 signature genes in asthma.

Methods: We performed a *post-hoc* analysis of data in patients with asthma and healthy controls (PMID#28933920). Asthma inflammatory phenotype was determined by the induced sputum differential: eosinophilic >3%; neutrophilic >61%. Bronchial epithelial gene expression was measured using RNA microarrays on endobronchial brushes. Eotaxin-3 gene expression was compared between phenotypes by one-way ANOVA corrected for 10 comparisons. Pearson correlations ($p < 0.05$ significant) were computed between eotaxin-3 and fourteen other IL-13-induced genes reported in *in vitro* epithelial cell studies.

Results: Data from 38 asthmatics and 18 controls were included. Eotaxin-3 gene expression was highest in eosinophilic asthma (Fig 1A). The correlation matrix (Fig 1B) shows strong associations between eotaxin-3 gene expression and IL-13-induced-genes in patients with asthma. The 3 most correlated genes were Serpin Family B Member 10 (SERPINB10: $r=0.85$), periostin (POSTN: $r=0.79$) and nitric oxide synthase 2 (NOS2: $r=0.72$). Correlations in controls were not significant (not shown).

Conclusion: Eotaxin-3 gene expression is upregulated in the airway epithelium in eosinophilic asthma and highly correlates with IL-13 signature genes – including biomarker genes POSTN and NOS2.

