**Abstract**
Interleukin (IL)-1 gene family encodes for pleiotropic pro-inflammatory and anti-inflammatory cytokines. Genome screens mapped asthma phenotypes to chromosome 2q12-21 where IL-1 gene cluster is located. This study investigated the relation between asthma traits and polymorphisms at positions -31 and -511 of IL-1β gene (IL1B) in Chinese children. Plasma total IgE and allergen-specific IgE concentrations were measured by immunoassays. IL1B promoter genotypes were characterised by restriction fragment length polymorphism. One hundred and fifty-eight patients and 56 controls were recruited. Significant inter-ethnic variations in allele frequencies of IL1B were found between Chinese and other populations. Neither IL1B polymorphisms was associated with asthma. However, patients homozygous for IL1B -31C had lower FEV1 (p=0.03) and FVC (p=0.008). More subjects with IL1B -31C/-511T haplotype had increased plasma total IgE (OR 1.61, 95%CI 1.02-2.54; p=0.04) and decreased FEV1 (OR 1.78, 95%CI 1.06-3.02; p=0.03) and FVC (OR 1.87, 95%CI 1.09-3.22; p=0.02). In conclusion, IL1B promoter polymorphisms are associated with poorer lung function and increased plasma total IgE concentration in Chinese children.

**Key words**
Asthma; Atopy; Chinese; Interleukin-1β gene; Spirometry

**Introduction**
Asthma is characterised by chronic airway inflammation caused by a complex interaction between genetic and environmental factors. A key element in the inflammatory response of the asthmatic airways is the production of pro-inflammatory cytokines, notably interleukin (IL)-1β, and to a lesser extent, tumour necrosis factor-α. The human airway smooth muscle releases IL-1β, which, together with IL-5 from type 2 helper T lymphocytes, modulates bronchial hyperresponsiveness (BHR). On the other hand, IL-1Ra possesses anti-inflammatory properties, and inhibits in vivo BHR to histamine and airway inflammation in sensitised animals. The imbalance between pro- and anti-inflammatory cytokines, especially IL-1β and IL-1Ra, might thus be an important determinant of asthma. Genome-wide searches mapped asthma and atopy to a number of chromosomal regions, including chromosome 2q12-21 where the genes encoding IL-1α (IL1A), IL-1β (IL1B) and IL-1 receptor antagonist (IL-1Ra, IL1RN) were located. These genetic and functional characteristics of IL-1 support the candidacy of IL-1 cluster as an asthma susceptibility locus. Using candidate gene approach, IL1RN polymorphisms were associated with various asthma and atopy phenotypes. Interestingly, a gender-specific effect was seen between IL1B -511 polymorphism and...