BACKGROUND: Human IL-18 is an inflammatory cytokine that plays a role in atopic diseases, such as atopic eczema (AE), by enhancing IL-4 and IL-13 production and stimulating the synthesis of IgE. OBJECTIVE: To evaluate associations of polymorphisms in the IL18 gene on chromosome 11q22 with AE, we performed genotyping for single nucleotide polymorphisms (SNPs) in the IL18 gene in 225 patients with AE and 175 healthy control volunteers.

METHODS: Genotyping was performed by means of restriction fragment length polymorphism analysis. RESULTS: Analyses revealed significant associations of SNPs +113[t/g] and +127[c/t] in exon 1, -137[g/c] in promoter region 1, and -133[c/g] in promoter region 2 with AE. These associations were not directly dependent on a specific subtype of AE or the concomitant manifestation of allergic rhinitis or asthma. On the functional level, the amount of IL-18 in the supernatants of PBMCs of patients with AE stimulated with Staphylococcus aureus enterotoxin B was significantly higher than that in healthy control subjects. In parallel, the amount of active IL-18 in the sera of patients with AE was enhanced at the exacerbation of their disease.

CONCLUSION: In conclusion, our data suggest that SNPs in the IL18 gene might be involved in the development of AE by contributing to a functional dysregulation of the IL-18 production in vivo.