Based on a recent positional cloning approach, it was claimed that the collagen 29A1 gene (COL29A1), which encodes an epidermal collagen, represents a major risk gene for eczema underlying a previously reported linkage to chromosome 3q21. However, thus far, not a single replication attempt has been published, and no definitive functional data have been provided. We aimed to determine whether COL29A1 polymorphisms contribute to eczema susceptibility and whether COL29A1 expression is altered in eczema. We investigated the reported association of COL29A1 variants with eczema, subtypes of eczema, and eczema-related traits in 5 independent and large study populations comprehensively phenotyped for allergic diseases: a set of 1687 German patients with eczema and 2387 population control subjects, a collection of 274 German families with eczema-diseases children, a cross-sectional population of German children (n = 3099), the Swedish population-based birth cohort Children Allergy and Milieu in Stockholm, an Epidemiologic Study (BAMSE) (n = 2033), and the European
cross-sectional Prevention of Allergy-Risk Factors for Sensitization Related to Farming and Anthroposophic Lifestyle (PARSIFAL) study (n = 3113). An additional set of 19 COL29A1 coding single nucleotide polymorphisms was analyzed in BAMSE and PARSIFAL. COL29A1 expression was investigated by using in situ hybridization. We found no evidence for a relationship between COL29A1 polymorphisms and eczema. The equivalence test rejected the hypothesis of association even excluding small effects. In situ hybridization carried out on biopsy specimens from lesional and nonlesional skin of patients with eczema and from healthy control subjects did not show any differences in the cellular distribution pattern of COL29A1 expression at the mRNA level. Our results suggest that COL29A1 is unlikely to contain genetic variants that have a major effect on eczema or atopy susceptibility.